HOARD'S DAIRYMAN

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1885-1960

MAY 25, 1960

THE NATIONAL DAIRY FARM MAGAZINE

Now . . . *Mueller* offers direct-expansion type bulk milk tanks in both "atmospheric" and new "vacuum" models. When you're thinking of a new tank, let us prove that ***Mueller*** in either model is a wise choice . . . that you really get your money's worth in beautifully finished workmanship and all of the features that dairymen expect to find in a bulk tank.

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NEW HORNFLY CONTROL THAT WORKS

Malathion, the same powerful phosphate insecticide you've been using in barns, can be dusted directly on your cows

Malathion has been accepted by the USDA for direct application on dairy cows. A handful of 4% or 5% malathion dust protects a cow from production-cutting hornflies up to 14 days. Simply whisk the dust over the animal's back and neck. It takes only about 12 seconds a cow . . . (4 minutes for a 20 cow herd)! It's as fast and easy as *that!*

Malathion gives you . . .

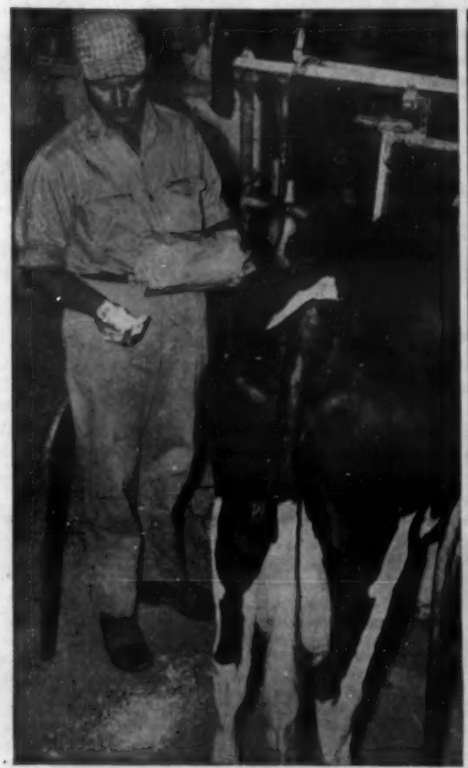
1. Power—Because malathion is a phosphate, it really knocks out hornflies . . . fast and thoroughly.

2. Safety-in-use—Malathion has *low* toxicity to man and animals. As a matter of fact it has already been used for years directly on hogs, beef animals, poultry . . . even household pets.

3. Economy—Four tablespoonfuls (about a handful) of malathion dust is all it takes to treat a cow. Compare the *cost* of malathion to any other method of hornfly control.

4. Easy-to-get—Malathion is *not* a trade name. Many well-known manufacturers offer 4% and 5% malathion dusts under their own brand names. Ask your dealer about the brands he stocks.

Note: Do not apply to your cows within 5 hours before milking or during milking. Don't use malathion directly on your animals in spray form. (Use sprays for area control of barn and stable flies, etc.) And, of course, don't allow the dust to get into water troughs. American Cyanamid Company, Agricultural Division, New York 20, N.Y.



7:29 AM *It's as easy as this: After morning milking take handful of malathion dust from bag, whisk over cow's back and neck. No need to work from both sides of animal.*

12 Seconds later . . . *Protected from hornflies, this cow won't lose part of her milk-producing capacity on pasture.*

2 Weeks later . . . *Even though the dust can no longer be seen, the cow is still protected from hornflies . . . still producing all the milk she's capable of producing. However, it's time to dust with malathion again for another 14 days' control.*

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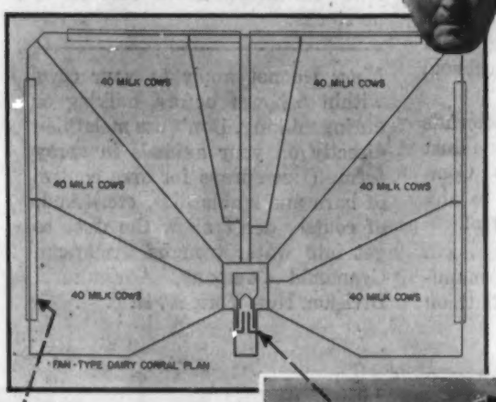
INSECTICIDES

CYANAMID SERVES THE MAN WHO MAKES A BUSINESS OF AGRICULTURE

"Concrete and this modern dairy plan make milking 240 cows every 8 hours a cinch!"

Says SETH EADS, Litchfield Park, Arizona



Concrete feed bunks and aprons border the corrals.

"Grade A" standards are easily met with a concrete masonry milking parlor.

"I planned my whole dairy operation around concrete and this University of Arizona plan of fan corrals. We're now milking 240 cows around the clock, and will soon double our capacity with another layout exactly like this one. And all the work for the 480 head will be handled by just 9 men!

"In the corrals, a wide concrete apron at each feed bunk keeps cows out of the mud. We're sure of top production even in the worst weather. The milking parlor is concrete masonry—and it really gets a workout, day and night. It's washed down after each shift. Only concrete walls and floors can take such a beating. Even strong disinfecting chemicals can't hurt concrete. Everywhere I've used concrete I can see big advantages—the feed bunks themselves, water tanks, the floor of the holding pen. Concrete lasts so long without upkeep the whole set-up will pay for itself in no time."

Free plans! This new dairy layout, designed by the University of Arizona, has fan-shaped corrals that all lead to a holding pen. Milking is an "assembly-line" process. For plans and details write to the address below. (U.S. and Canada only.)

PORTLAND CEMENT ASSOCIATION

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A national organization to improve and extend the uses of concrete

HOARD'S DAIRYMAN

The National Dairy Farm Magazine

Publishers
W. D. Hoard & Sons Co.
Fort Atkinson, Wis.

W. D. Hoard

Founded by
W. D. Hoard, 1885
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Veterinary Editor, DR. E. A. WOELFFER

Volume 103, No. 10
May 25, 1960

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COVER PICTURE

The rapidly-changing character of this milking business is shown in the composite photo on the cover of this issue. In the foreground is Mrs. Doris Dyke of the Pioneer Village, Minden, Nebr. Her one-legged milk stool will bring back nostalgic memories to old-timers.

In his new milking parlor at Cottage Grove, Wis., is Kervyn Link starting to milk his 156-cow Holstein herd. His new tie stall milking barn and adjoining 8-cow milking parlor were featured in our December 10, 1959 Hoard's Dairyman Round Table, "We prefer a stanchion barn and milking parlor."

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The receipt of Hoard's Dairyman is notification that money on subscription has been received. The label on paper will show date to which subscription is paid. Changes of address should reach us three weeks in advance. Include old address.

Unwholesome, immoral and questionable medical advertising is excluded. A sincere effort is made to carry advertising of only reliable people. We will always take it as a favor to be notified promptly whenever any advertiser's dealings with the subscribers are not in good faith or evidence a lack of business honor. Advertisers recognize the readers of Hoard's Dairyman as an up-to-date class of farmers, and we hold our columns for the patronage of only those with whom our readers can deal with profit and satisfaction.

Hoard's Dairyman is published on the 10th and 25th of each month. Advertising copy for the 10th of the month issue must be received before the 10th of the preceding month. For the 25th of the month issue, copy must be received before the 25th of the preceding month.

Washington Dairygrams

SUPREME COURT RULES AGAINST DAIRY COOPERATIVE. ORDERS MARYLAND AND VIRGINIA MILK PRODUCERS MUST DISPOSE OF ITS FLUID MILK BOTTLING PLANT. COURT HELD THAT ACQUISITION VIOLATED ANTITRUST LAW. MAY SET PRECEDENT FOR OTHER PROSECUTIONS.

HOUSE HEARINGS ON NATIONAL MILK SANITATION ACT DRAW 50 WITNESSES. TESTIMONY ABOUT EQUALLY DIVIDED. SUPPORT IN NORTH CENTRAL REGION AND FROM U.S. PUBLIC HEALTH SERVICE. OPPOSITION FROM EAST AND SOUTH. U.S.D.A. TOOK NO POSITION BUT QUESTIONED ACTION. SENATE HEARINGS NEXT.

NEW POAGE OMNIBUS FARM BILL FACES ROUGH SLEDDING AS PROPONENTS BATTLE TO GET IT OUT OF COMMITTEE AND ONTO HOUSE FLOOR. PASSAGE DOUBTFUL. POLITICAL IMPLICATIONS GROWING IN THIS ELECTION YEAR.

FINAL MILK PRODUCTION FIGURES FOR LAST YEAR REVEALED 124.4 BILLION POUNDS PRODUCED, 487 MILLION LESS THAN YEAR EARLIER. MILK PER COW AVERAGED 6,438 POUNDS, UP 122 POUNDS FROM 1958. MILK FAT PER COW UP 4 POUNDS TO 243 POUNDS.

BEST GUESS ON FARM LEGISLATION IS THAT ONLY WHEAT WILL BE INVOLVED. SENATE COMMITTEE REJECTED NATIONAL GRANGE-FARMERS UNION-WHEAT GROWERS BILL BY 8 TO 8 TIE VOTE. FARM BUREAU PROPOSAL OVERWHELMINGLY DEFEATED. APPROVED BILL PROVIDES 80 PER CENT SUPPORT BUT 20 PER CENT REDUCTION IN ACREAGE PLUS 50 PER CENT PAYMENT IN KIND FROM SURPLUS.

PRESIDENT NEEDLES CONGRESS IN SECOND MESSAGE ON LEGISLATION. URGES PROMPT ACTION ON SEVERAL KEY ISSUES INCLUDING FARM PROGRAM.

★ ★ ★

In YOUR next issue!

HAVE YOU CONSIDERED INCENTIVE PAYMENTS? . . . New York dairymen are using a variety of bonus plans for their hired men as a means of keeping good men longer. One may suit your needs.

PUT OATS INTO THE SILO . . . but be careful to ensile it at the late milk or early dough stage and wilt to 70 per cent moisture content. Otherwise results will be disappointing.

MAKE IT A SAFE HAY HARVEST! . . . This illustrated feature may save your life. A day lost because of injuries is costly.

WHAT CAN PASTURES DO FOR YOU? . . . Results of 15 years of tests show that you can get 5,000 pounds of milk per acre by following certain management practices. Brome-alfalfa proved best in Wisconsin.

AND MANY MORE . . .

Easy TO ORDER OR RENEW!

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Fort Atkinson, Wisconsin

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PUSH-BUTTON
POWER CHORING.

• INCREASES YOUR PRODUCTION
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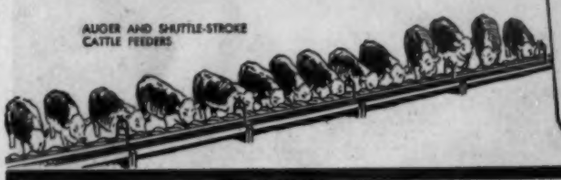
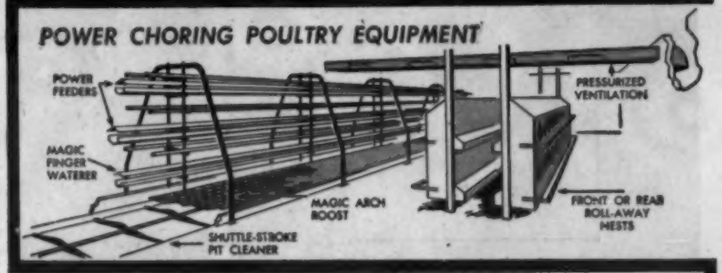
POWER CHORING CATTLE FEEDING



POWER CHORING POULTRY EQUIPMENT



POWER CHORING MILK PRODUCTION

BE-7-9

POWER CHORING HOG EQUIPMENT

This is only a partial list of the complete line of Jamesway Power Choring equipment. For full information on other Jamesway time- and labor-savers, fill out and mail the coupon below.

FIRST IN POWER CHORING.

Jamesway.
A DIVISION OF ROCKWOOD & CO.
Fort Atkinson, Wis. • Lancaster, Pa. • Los Angeles 63, Calif.
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☐ POWER CHORING POULTRY EQUIPMENT
☐ BULK MILK COOLERS
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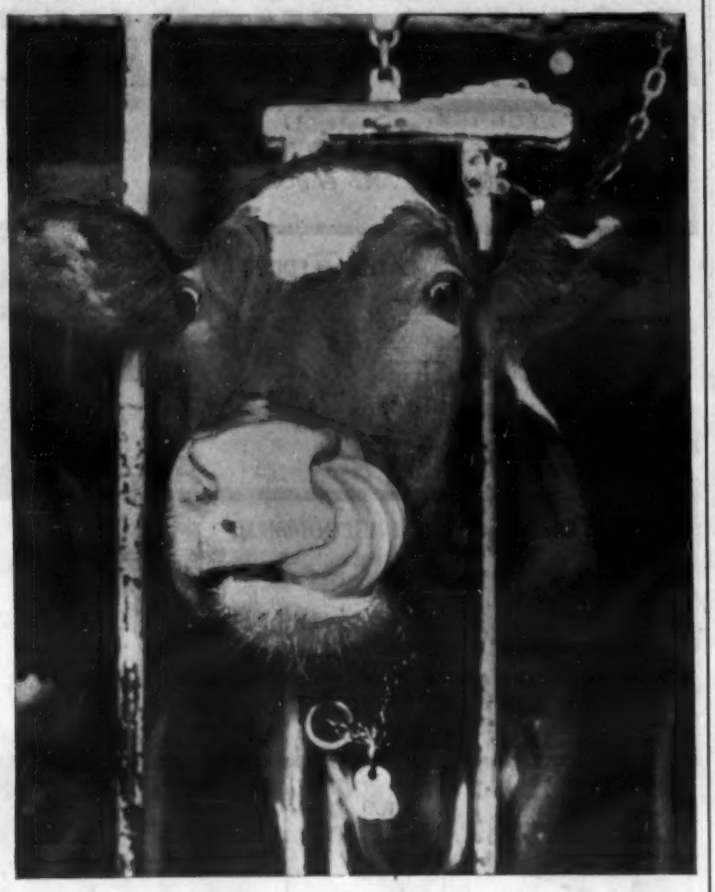
☐ BIG JIM TUB SILO SYSTEM
☐ POWER CHORING HOG EQUIPMENT
☐ OTHER _____

Name _____
Address _____
City _____ State _____

What is your major farming activity?

☐ DAIRYING ☐ HOGS ☐ LAYING FLOCKS ☐ BEEF CATTLE ☐ STUDENT

ANOTHER REASON MORE PEOPLE FEED PURINA THAN ANY OTHER FEED



grass is good, but...

Grass contains up to 85% water. That's why cows on straight grass usually lose body condition and do not maintain high milk production.

Grass alone simply does not contain the energy and other nutrients cows must have to keep producing and stay in condition.

Purina Research experiments prove conclusively that cows fed a good grain supplement while on pasture can produce up to 20% more milk per year than cows fed grass only. What's more important, grain-fed cows stay in good condition, ready to continue high production as they go into their following lactation periods.

See your Purina Dealer for the right Purina Milking Ration to supplement your particular pasture conditions.

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Opinions, Brickbats, Bouquets

These columns are open to the readers of Hoard's Dairyman for the expression of their opinion on any subject, whether radical or conservative, destructive or constructive, wise or foolish, critical or commendatory. Hoard's Dairyman assumes no responsibility for opinions expressed.

Against "free loaders"

In the March 10 issue of Hoard's Dairyman, a letter by Alvin Moses placed the blame for surplus farm products on the part-time farmers. I would like to carry his idea even further and say that not only those part-time farmers but well-heeled "city farmers" invest in the land, although farming is not their main means of support. And that is, I think, where the trouble lies.

Why don't we have licenses for farmers? Only the farmer who makes at least 70 per cent of his income from farming ought to be able to get a farm license which would entitle him to a marketing card and the right to take part in any of the governmental farm aid plans which are actually for the benefit of the **farmer,** not the free loaders.

It might just be that if we squeezed out some of those fellows who give us so much unfair competition, maybe the bona fide farmer would have a chance to make a decent, honest living and, in time, it might not be necessary for so many government aid plans.

My husband mentioned this idea at a recent Farm Bureau council meeting in our neighborhood and met with the retort that it would be interfering with free enterprise. Well, try to get your son in the plumber's union, or carpenter trade, or to be a doctor or a lawyer. Those are all pretty well sewed up and you often have to have pull to make out, or wait a good long while for a chance to be admitted to them.

So, why not grant the farmer the same protection? And I think a farm license is part of the answer.

One final thing, if agriculture is the backbone of our nation, as we have heard said so often, why not get that "backbone" in an upright position again instead of letting it sag with the weight of so many free loaders and "white collar" farmers?

Ohio MRS. PAUL BIXLER

Defends part-timers

Would like very much to reply to Alvin Moses in his opinion on part-timers. Is he jealous because he doesn't have a job? He didn't say anything about the people who milk 1,500 cows or plant 2,000 or 3,000 acres of crops did he? Give those people 160 acres for their living and there won't be any such surpluses as we now have.

Anyway, Alvin Moses, wake up. Hitler isn't running this country and hope you never do either.

Washington JAMES N. DOYLE

Injustice to Canada

We have read your wonderful magazine for many years. I first became acquainted with it while seeking information on loafing barns from our local agriculture office. He showed me an excellent article in Hoard's Dairyman on this subject.

Even though we pay more for our subscription than your United States readers, we would not miss it. It is highly regarded here.

The butterfat champion from Ohio which you described does not do justice to our country. Your article mentioned that she has some relatives in Canada, but an article I am sending you from our Holstein-Friesian Journal shows very clearly that she is from real champion Canadian stock.

Canada M. S. ELGERSMA

According to the article referred to, "Patsy" was bred in Ontario by Ralph Parker of Salford. Both of her grandsires are Oxford Unit bulls. Her dam, bred by J. R. Riach of Woodstock is one of the group of Canadian Holsteins bought for resale by cattle dealer E. T. Bowers, Medina, Ohio. The calf she carried, to the service of the Parker-bred Beekist Acres Comet, turned out to be the new champion.

Put "surplus" on market

M. H. Banner's recent letter in criticism of direct payments leads me to wonder just what his economic thinking is based on. Under a system of direct payments there is no hint that the government makes up the difference in income from a poor or good job of farming. It merely guarantees a fair price for produce sold. Naturally, the more efficient operators will enjoy a greater return.

For years we have been promised that success would be obtained through greater production — per acre, per cow, per man. Now we are being painted as villains because we have created a "surplus" that no one seems to be able to manage.

Why should a program aimed at putting this "surplus" on the market so people can consume it be pictured as being inimical to the best interests of any group merely because it proposes that government payments make up the difference between what it sells for and its true cost of production? Farmers have long taken this difference out of themselves and it is high time that a more realistic approach to the whole farm problem be attempted.

New York DOUGLAS M. SPENCER

Can't buy quality hay

I always look forward to each issue of your very wonderful magazine. I find so much of real value in every issue.

After reading your February 10 issue, I want to agree with Orville Creech of Utah 100 per cent on his "Surplus is wealth." There are so many fine letters in this column, which in my thinking is quite an asset to your paper.

I have been reading all the fine reports from big and little operators all over the country for eight years now and really get some fine information from the experiences of others, but I would like for some of those boys to give me some additional information as to how I can be as successful in my particular locality as they have been in theirs. I learn by asking questions and I feel that these men who have contributed to the many articles in your fine magazine might have some advice to offer.

I have read so many articles stressing the feeding of good-quali-

ty hay to dairy cows. I have to buy all the alfalfa hay for my herd from trucks that bring it into my part of the territory. So much of it is full of weeds, old dead hay from the year before, in many cases, stemmy, and cut about two weeks too late to get good hay. I am paying $45 per ton for it now but most years in the past, I was able to get the first cutting in May for around $25.

We plant Sudan for summer grazing about the middle of April. This generally lasts until frost, in or near the latter part of October. We plant oats, vetch, rye, and some other small grains for winter grazing, but very few years have we gotten our actual expense back on this winter planting.

I have tried all kinds of hay, silage, and so forth, but alfalfa hay is the only answer to the best milk production under my setup in this part of the country.

I have found some dairymen who state that their cows produce at top levels on silage, but I lost production on it, so its straight alfalfa for me!

I feel that buying alfalfa is like buying dairy cows, in most cases—if the hay is any good, they keep it for themselves and sell the scrap.

Thanks again for a very fine magazine, and I sure would like to hear what those top operators would do in my case.

Texas G. R. GREEN

Straight thinking

Let me congratulate you on your editorial "Why not a free market?" We need some straight thinking; you have given us a full page of it.

Illinois PAUL MONTAVON

"Disgraceful surrender"

Mere words cannot express a farmer's disgust with the government's disgraceful surrender in the so-called "settlement" of the steel strike. This sellout of the American people was engineered by a gutless, spineless President and an equally cowardly Congress.

"A political fix" in the words of Walter Lippman.

"A collective bludgeoning" in the words of David Lawrence.

These eminent writers were not fooled. Anyone with an ounce of sense knows that these steelworkers needed a raise about as much as Nelson Rockefeller needs another million.

Your argument that some increase was "inevitable" follows the old absurd line of a certain gent in the White House who constantly burbles about the dangers of inflation, and then proceeds to do his dirtiest in promoting more inflation than ever.

Already there are demands in Congress for higher tariff protection against "cheap" foreign steel. Wouldn't you just know it? First we are clubbed over the head by unjustified wage-price increases, then the inevitable demand for higher tariffs.

Tell us, why is it necessary that a steelworker be paid seven times as much per hour as a dairy farmer? Why were these steel workers permitted to set off another round of inflation when the country is already in a precarious position?

Farmers will bear the brunt of the increased prices for steel—farmers use more steel than any other class of people. The ultimate effect of the government's anti-agriculture policies will be to bring about class warfare. Government sanctioned gangsterism in the la-

(Continued on next page)

Mr. Miller (left) discusses the advantages of Firestone truck tires with Firestone Dealer, Ed Claycomb.

"From Red River to the border—Firestones proved themselves to me!"

says A. S. Miller, Scott City, Kansas. "We ran our own truck tire tests using Firestone and another brand. We ran the same road, same load, same miles. The other tires wore out fast while the Firestones looked like new. Firestone is always on top with improvements—and the service I get from Ed Claycomb, my dealer, keeps me mighty happy, too!"

Like A. S. Miller, you'll find Firestone truck tires deliver extra service at no extra cost!

- **FIRESTONE RUBBER-X,** the longest wearing rubber ever used in Firestone truck tires, greatly prolongs tread life.
- **FIRESTONE SHOCK-FORTIFIED CORD** gives you built-in stamina for top impact resistance under roughest hauling conditions.
- **FIRESTONE TRANSPORT TIRE:** designed and built to give you maximum mileage at minimum cost in general farm hauling.
- **FIRESTONE ALL TRACTION TIRE:** improved road mileage leader with top traction for feed lots, soft fields and lanes.
- **FIRESTONE SUPER ALL TRACTION TIRE:** heavy duty, wide, *extra deep* tread for traction on highways or in mud or snow.

Extra service at no extra cost—that's the Firestone story over and over again! See your Firestone Dealer or Store about the complete line of Firestone farm tractor and implement tires, too. And remember, Firestone's **FREE NEW TRACTOR TIRE LOANER SERVICE** keeps your equipment working during retreads and repairs.

CONVENIENT TERMS

Firestone

BETTER RUBBER FROM START TO FINISH

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The Brillion
HAY CONDITIONER
makes your hay a new, better feed

The proof piles up: Brillion steel-roll-conditioned hay is better hay—much better feed.

Look at these facts—and the agricultural college research proof:

FACT: Brillion-conditioned hay will be greener, brighter, less likely to be rained on.

PROOF: College research (reported in Cornell University Bulletin #339) shows Brillion-type, steel-roll-conditioning which splits the entire stem—made hay dry down hours ahead of crimped hay.

FACT: Brillion-conditioned hay will be leafier.

PROOF: University of California tests (Paper #59-132) show only insignificant field loss for Brillion-type, steel-roll-conditioning—only 1.1%. Leaves supply high-value protein, improve palatability, are the most easily digested part of hay. Save them, with the Brillion.

FACT: Brillion-conditioned hay will be better feed.

PROOF: Additional agriculture college research with various conditioners indicated Brillion-type, steel-roll-conditioned hay produced 15 to 20 percent greater gains per hundred pounds of feed fed. The reason: laboratory analysis showed that Brillion-type steel-roll-conditioned hay tended to be higher in protein and lower in crude fiber—better feed.

The Brillion not only produces the best feed, but does it dependably, trouble free, day after day, season after season. Handles heavy hay, weeds, stones, trash; doesn't plug on uneven ground. This built-in Brillion quality is the reason:

● ALL FOUR DRUMS POWER DRIVEN

Non-powered reels on ordinary hay conditioners rub off tender leaves, tear and clip heads.

● FLUFFER

Leaves conditioned hay standing tall in the swath. Cuts drying time.

● SEALED-FOR-LIFE BEARINGS

Only 3 places to grease on the whole machine!

● BIGGER DRUMS

Large diameter drums open stems gently, without clipping tender tips and leaves.

● LIGHT DRAFT

Any one-plow tractor with standard PTO can pull the well-engineered Brillion.

And a Brillion Unloader Solves Your Silage Feeding Problems

The Brillion has all the features you want in a silo unloader: Bigger capacity, level cut, single cable suspension, straightline feed, and no-clog blower. It ends your frozen silage problems.

Its simple, rugged construction is proven, dependable. The Brillion fits any silo, fast.

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☐ I am a student
(Write name and address on margin.)

(Continued from preceding page)

bor rackets has begun the gangrene which will destroy the whole country. But until the final blowup let's have one farm paper with enough gumption to present the true facts.

Pennsylvania L. T. COBLE

The only alternative is wage and price controls across the board. To our knowledge, no group in agriculture, industry, or labor has urged such an extreme step in peacetime.

Our legal right

Thank you so much for your editorial ("For better dairy inspection") concerning the rather helpless judiciary situation in which dairy farmers now find themselves.

Just recently Michigan introduced legislation which will minimize inspections. However, our independent principle of being able to speak for ourselves is still at a standstill,

We feel articles such as the one previously referred to will eventually awaken the farmers to action, thus enforcing our legal rights under the constitution.

We need more pioneering magazines such as Hoard's Dairyman.

Michigan MRS. LEO VARNER

Inspector trouble

After reading your editorial, "For better dairy inspection," I must say I agree with what you had to say and do feel everyone has the right to expect clean handling of milk with clean utensils. I will also go along with the 90 per cent of the inspectors being fair and respectful citizens.

But what about that 10 per cent? We have our entire future and life savings in their hands, too.

Our regular inspector is in the 90 per cent. But one day his superior came out and the regular inspector was a mouse in the corner along with the fieldman, and also myself if he could have pushed me. He gave me the feeling he thought I was dirt under his feet.

At this point I did some inquiring on this "big man." This is what I found. The man had been out of jail three weeks. Had been deported from our country for a certain length of time some years back and has been working on a permit since that time.

The farmer does not ask leniency but I do believe we have the right to be used as if we are human.

Wisconsin A READER

How difficult to cure

A brief comment on the editorial entitled "Mexico has gap, too" in February 10 issue.

After carefully reading this editorial it becomes clear to any logical mind that the question involved here is essentially simple though its correction is not.

What it boils down to is simply this: Raw materials, low price—manufactured goods, high price. In light of high cost of labor (and corollary with this the high level of taxation necessary to meet governmental costs controlled by this high cost of labor), it is inevitable that there exists a very wide gap between raw material prices and manufactured goods prices which will certainly grow wider with every increase in labor costs which are not in accord with increased product output.

What these gentlemen quoted are, in reality, saying is that labor costs are so far out of line with product output that an increasing disparity in price relationship exists and is increasing its effect.

It is to be regretted that political considerations do not permit the unvarnished truth to be directly revealed in simple and unmistakable words. It is also regrettable that reports concerning industrial and other economic activities are ever released in dollar comparison terms, which, if compared with productivity levels, would often reveal not an increase but an actual decrease in product output though purporting to show, by dollar increase, the reverse. This illustration is perhaps not too good but it tends to point up what I mean: 1,000 tractors at $2,000 = $2,000,000; 1,000 tractors at $2,500 = $2,500,000, ostensibly a 25 per cent increase in production but, in actuality, **no change whatsoever.**

In far too many instances this is all the value to be placed on dollar comparisons which, if taken as is the custom of men who should know better, creates an atmosphere tending toward "fool's paradise."

So you see how simple the cause—but how difficult the cure.

New York BARDEN JONES

Teach a lesson

I refer to the letter, "Credit to city slickers," by Don A. Bohn. He says that the city slickers stick together about daylight saving time. They surely do. And they always seem to get what they want. What do they care about us as farmers?

Sometimes I wish farmers would stick together just long enough to quit sending fancy food to cities for city slickers' consumption. Maybe a quick, but short, shock would impress upon these people how much the farmer means to them. Then they might consider some of our problems rather than their own selfish interests all the time.

Minnesota MRS. A. R. FISCHER

Why produce surplus of milk?

Here is a suggestion for reducing surplus and giving farmers a bigger share of the blended price.

As an oversimplified example: When around 50 per cent of the milk goes into Class I, half of the shipper's milk goes for manufacturing price. Yet, if he keeps milk home to feed calves, half of that comes from his Class I shipment. That is why farmers are turning to milk substitutes.

If a farmer keeps half his milk home, why isn't he entitled to Class I price for all he ships? Then he could also make a little on his calves and the plant wouldn't have to process or move all that low-class milk.

Of course, it would be hard to determine how much milk a man was keeping home. It would depend largely on his honesty and his bookkeeping, and would probably involve some system of inspection or checking by the trucker.

Perhaps a simple way would be to let the shippers buy back what they want at manufacturing prices. Even with a handling charge and return trucking, it seems as if a man could at least break even. Every pound of surplus milk taken off the market is to everybody's advantage in the long run.

New York MILTON B. PORTER

Mr. Porter is, in effect, recommending the use of Class I bases

(Continued on page 562)

Zero® AUTOMATION...

Allows a BIG Tank in a SMALL Milk House!

Zero®...
The Pioneer of VACUUM Tanks
....Announces Another FIRST
THE NEW Zero®
BIG-SHORTY
•
Only with VACUUM and SPATTER-SPRAY Cleaning is this Possible!

THIS VACUUM TANK IS A NATURAL FOR A PIPELINE—OR USE IN STANCHION BARN WITH ZERO STEP-SAVER, SHOWN ABOVE

NO LIFTING! NO PUMP OR RELEASER NECESSARY!

Now you can increase milk-handling capacity—and make more money—*without the expense of enlarging your milk house!* ZERO—pioneer of the major developments in farm bulk milk coolers—makes this possible with another great achievement . . . the *revolutionary, exclusive, patented ZERO BIG-SHORTY T-20 VACUUM AUTOMATIC BULK MILK COOLER,* shown above. It's a *big* tank that fits into a *small* milk house!

Just imagine! You can install a 600-gallon ZERO BIG-SHORTY Tank in a 12-foot-long milk house. And 800-gallon through 1,500-gallon BIG-SHORTY Tanks in proportionately-larger milk houses.

Only ZERO Automation—making use of *Vacuum* and ZERO's *Built-in Spatter-Spray Automatic Washer*—makes this possible!

No Lifting! ZERO's Vacuum does the "lifting" for you! The photo above shows how. You simply set up a new, low-cost, 21-inch-high ZERO accessory—the *ZERO VACUUM-OPERATED STEP-SAVER*—in the milk house, stanchion barn or basement barn. And connect it with a milker line to the ZERO BIG-SHORTY Tank. This forms a *simple direct milking system,* called the *ZERO PAIL PIPELINE*—without need of an expensive pump or releaser, or a pour-in strainer.

Milk poured into the 21-inch-high ZERO STEP-SAVER—whether set up in the milk house, stanchion barn or basement barn—is immediately *syphoned* into the ZERO BIG-SHORTY Tank by *Vacuum supplied by the tank.*

Automatic Cleaning! ZERO's *Built-in Spatter-Spray Automatic Washer* is your aid to a cleaner bulk milk tank. The ZERO Spatter-Spray consists of *built-in, twin, variable-speed electric motors with twin cleansing impellers.*

At low speed—you are assured proper agitation for uniform cooling. At intermediate speed—positive, uniform milk sampling. And at high speed—the twin impellers hurl a *double crossfire "tornado"* of water against the tank's round, stainless-steel sides—for automatic washing, rinsing and sanitizing.

Vacuum Produces Finer-Flavored Milk! The *Vacuum* holds the ZERO Tank's lids on tight—keeping your milk *Vacuum-sealed* at all times against contaminating dirt, dust, insects, airborne bacteria and barn odors. Assuring you finer-flavored milk that brings higher premium prices.

See Your ZERO Dealer! The sooner you install a ZERO BIG-SHORTY Tank—the sooner you'll start making more milk money. So mail Coupon today for full information, including specifications and sizes—location of your nearest ZERO installation—and name of your nearest Zero Dealer!

WASHES, RINSES AND SANITIZES ITSELF . . . AUTOMATICALLY!

Photo above shows the ZERO BIG-SHORTY'S *Built-in Spatter-Spray Automatic Washer in action.* This important part of ZERO *Automation* enables the ZERO to *wash, rinse and sanitize itself,* with a minimum of brushing—*with the simple turn of a knob.* The Spatter-Spray's *twin impellers* hurl a *double* crossfire of water, with *"tornado"* force, against the tank's round, stainless steel sides. Round-shaped—the ZERO has no hard-to-clean, out-of-reach crevices or corners—which makes the ZERO particularly suitable for self-cleaning. In addition, the *Vacuum* seals the lids—preventing loss of water while cleaning.

FREE BOOK....

Tells How to Make More Money with Milk

Gives full information about ZERO T-20 Bulk Milk Coolers. Includes dimensions and sizes of different-size ZERO Coolers. Shows how easy it is to slide and fit the round ZERO Tank into your milk house. Mail Coupon below for this FREE Book today!

ZERO CORPORATION; 621-E Duncan Ave.; Washington, Mo.

A BASIC MANUFACTURER

Zero® AUTOMATIC BULK MILK COOLER

—with BUILT-IN SPATTER-SPRAY AUTOMATIC WASHER

T-20 VACUUM
—Nature's Own Way

THE COOLER THAT REVOLUTIONIZED THE DAIRY INDUSTRY!

MAIL COUPON FOR FREE BOOK AND FULL INFORMATION!

ZERO CORPORATION
621-E Duncan Ave.; Washington, Mo.

Please send *me* your FREE BOOK: *"How to Make More Money with Milk"*—full information about the ZERO BIG-SHORTY T-20 Vacuum Milk Cooler, including specifications and sizes—location of nearest ZERO installation—and name of *my* nearest ZERO Dealer.

NAME.....

SIZE OF MY MILK HOUSE.....

ADDRESS OR RFD.....

TOWN.....STATE.....

25

(Continued from page 560)

in federal milk marketing orders. The U.S. Department of Agriculture, which administers federal milk marketing orders, maintains that the enabling legislation under which the orders are established does not permit the use of Class I bases. At the present time, only the use of bases for leveling out seasonal variation in milk production are permitted.

Haying in the year 2000

To all who think the farmer's plight is easy,
With subsidies and modern equipment;

To all who chaff and say,
"The farmer don't work much no more."

To all who believe the farmer never tires,
Or perspires, or strains himself to do the job—

Let me ask those city-bred, book-educated,
Sofa-ensconced, white collar hackies—

"Could you unload one wagon of hay?
And move it to the loft?

125 bales and use the best equipment?
Could you? You would! But not the second load!

You'll know how tough the task.
You'd be dead!
There's 40 wagon loads to do. But hurry!

Rain's coming. Hurry! There's milking yet to do."
How old is a farmer? He's not always young.

It'll be the same in the year 2000
A FARMER REALLY WORKS.

New York "BARNYARD STRIPLING"

"Proclaim the virtues"

I have been reading Hoard's Dairyman for over 30 years and find it to be the greatest dairy magazine I know of.

We talk so much about surplus but what are we doing about it? I know of dairymen who sell all their milk, then go to the store and buy oleo, the stuff the rats won't even eat if given their choice of butter or oleo. Butter costs more money but you only get what you pay for.

If every dairyman would buy butter instead of this cheap substitute, there would be no surplus.

Another thing is advertising. I feel we have only scratched the surface compared to what alcoholic beverages (which I do not use) have done.

Let us proclaim the virtues of the greatest, most nearly perfect food on earth — milk.

God promised the children of Israel a land flowing with milk and honey but, remember, it was not thrown in their lap. They had to go in and possess it. So, too, we must go into advertising if we want to get anywhere in our dairy industry.

Sure, it costs to advertise but I believe we will reap great returns.

Yours for another glass of milk and my bread spread with butter.

Ohio VINCENT C. STEINER

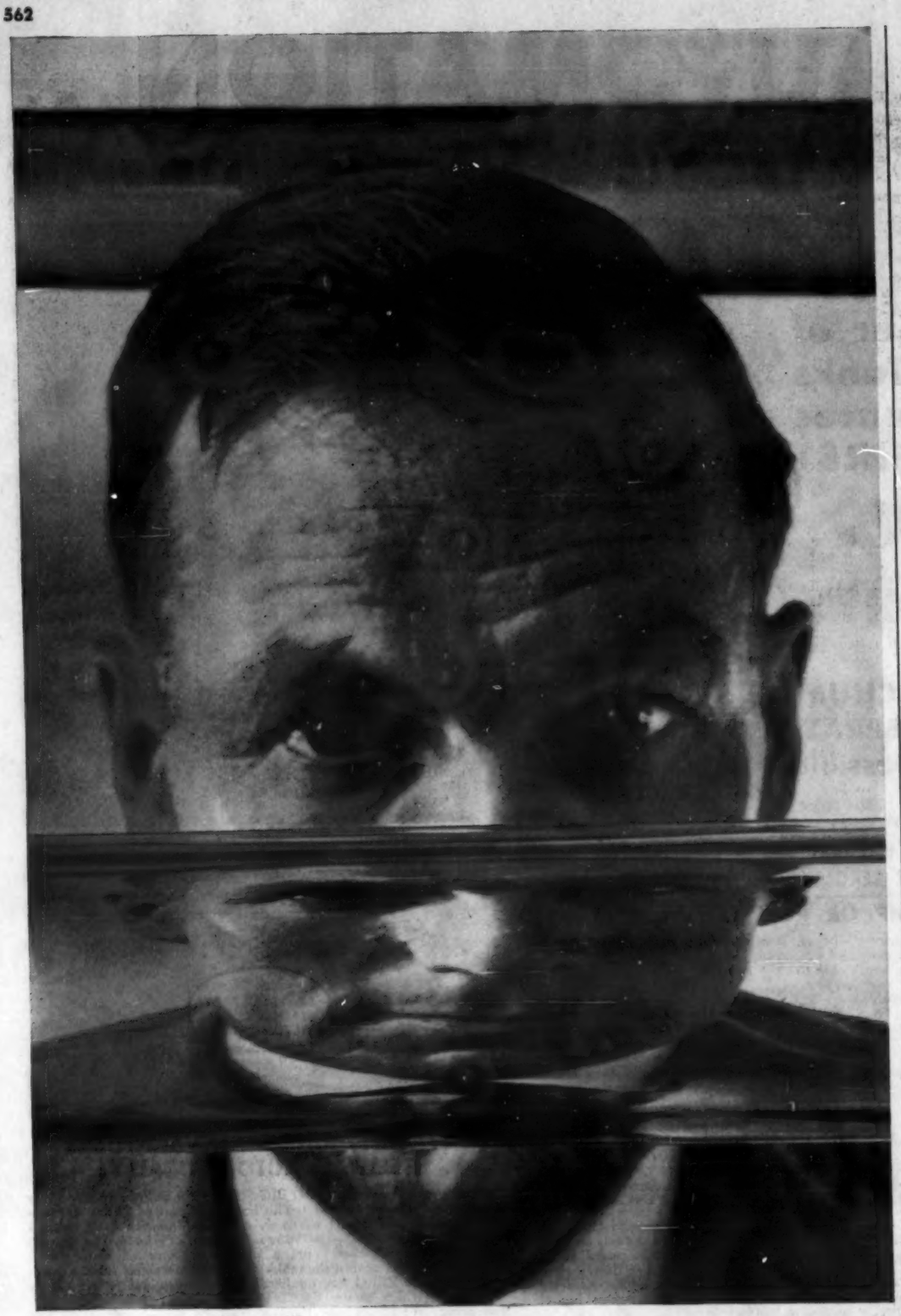
Pleasure to renew

It is a pleasure to enclose my renewal for five years to your outstanding "tool of the trade."

Yours is a magazine which is a cover-to-cover "must." There is never an issue where the advice in one article, if followed, is not worth more than the entire cost of a five-year subscription.

Congratulations on your past record. I am confident the future will even further improve the agriculturists' regard for you.

Ohio LEWIS H. ROEMISCH



How the transparency of PYREX® pipe makes a milker more profitable

When you see right through a pipe, you can check sanitation visually. You *know* the pipe is clean and free from trouble without any guesswork.

You clean faster, too. You can use cleaning solutions at full strength with PYREX pipe, no matter how harsh the solution. PYREX pipe cannot corrode or pit.

PYREX pipe is smoother by far than the most highly polished metal, so it speeds cleaning, discourages any build-up of milkstone or bacteria.

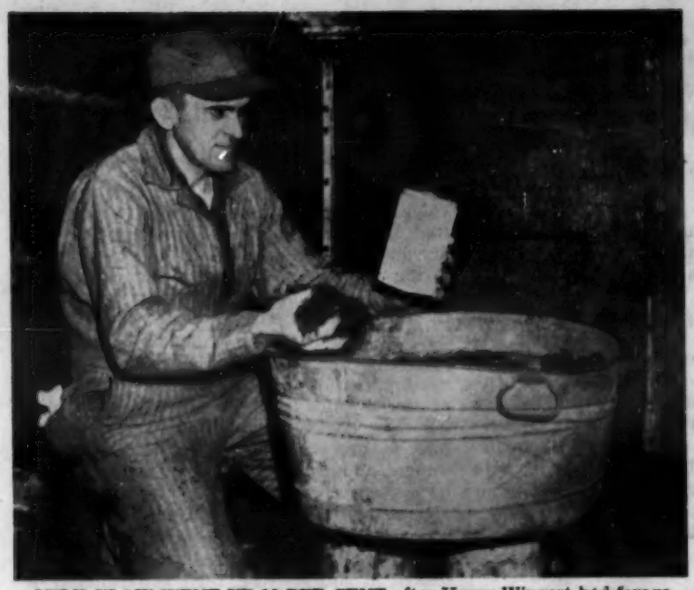
FREE BOOKLET ON PIPELINE MILKING

See the many ways you can run your dairy more profitably with a PYREX pipeline milking system by writing to us at 27 Crystal Street, Corning, N. Y., for the free booklet "Facts about PYREX Pipe." Or, call your dealer who represents: Chore Boy Mfg. Co. • DeLaval Separator Company • Hinman Milking Machine Company • J. C. Marlow Milking Machine Company • James Mfg. Co. • Perfection Manufacturing Corporation • Rite-Way Dairy Farm Equipment Corp. • Universal Milking Machine Division.

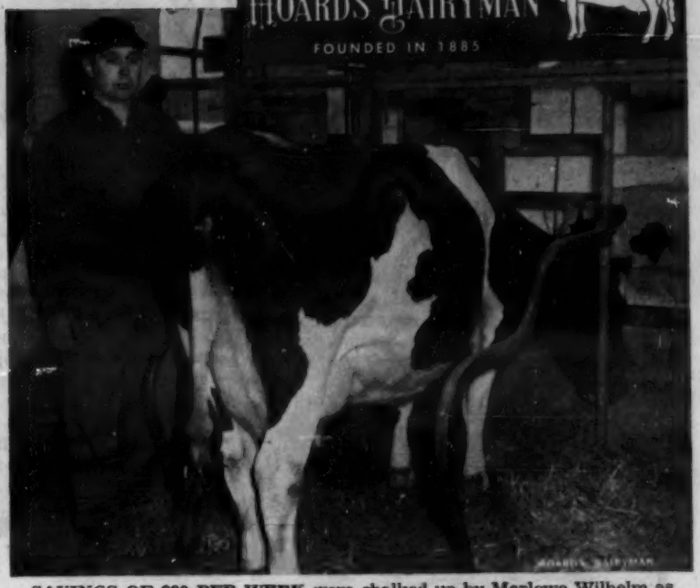
CORNING GLASS WORKS
CORNING MEANS RESEARCH IN GLASS

MILK-PURITY-PROTECTED with PYREX® GLASS PIPE

HOARD'S DAIRYMAN
FOUNDED IN 1885
75 YEARS OF LEADERSHIP



MILK FLOW WENT UP 10 PER CENT after Henry Wingert had forage tested and adopted a new feeding program. Silage and hay were high in protein so he could reduce grain ration from 15 to 12 per cent protein. Added milk production paid for cost of forage testing in just three days.



SAVINGS OF $30 PER WEEK were chalked up by Marlowe Wilhelm as he saved $20 per week on feed the first year, plus an additional $10 per week during the second year. He raised the protein content of his grain mixture from 15 to 18 per cent, and milk flow increased 15 per cent.

Forage testing is paying off . . .

. . . as these Pennsylvania dairymen save on their feed bills and get more milk with better feeding programs. Here is a farm-by-farm report.

by R. E. Adams and J. E. Baylor

APPROXIMATELY 2,500 forage samples have been processed since the Penn State Forage Testing Service was launched in January 1959. In addition, feeding programs have been developed for about 700 farmers. Some states have already started similar programs; others are planning to.

What kind of results are farmers getting? Is it a worthwhile program? We will attempt to answer these questions with information presented by satisfied users of the service.

Grain bill reduced . . .

Last year Marlowe Wilhelm of Crawford County cut the grain bill for his herd of 45 cows by $20 per week. These savings resulted from using the low-cost grain mixture suggested on his feeding program. This mixture cost substantially less than his previous one, even though the crude protein content was raised from 15 per cent to 18 per cent.

Production increased more than 15 per cent when the herd was fed according to the suggested program.

This season Mr. Wilhelm is saving an additional $10 per week in feed bills! This stems from a decrease in the amount of protein needed from 18 per cent to 14 per cent based on forage tests. Both forage quality and intake are higher this year.

Forage quality improved . . .

In contrast to 1959, this season all of the forage on the farm of Floyd Corselius in Lackawanna County has tested good or excellent. One of the major factors responsible was undoubtedly the postponement of corn planting until all first-cutting forage was harvested. Short-season silage corn was then planted with excellent results.

Mr. Corselius decided to revamp his forage program after seeing his forage testing reports last year. Last spring his haymaking started on May 25 about **two weeks earlier** than previously. The DHIA average for this Holstein herd rose from 11,633 pounds to 13,200 pounds of milk during the past year.

Greater forage intake . . .

Forage testing reports have shown that Roy Christman of Berks County has outstanding forage. However, we pointed out to him last year that forage intake in his herd was quite low. Such is not the case now.

The amount of hay-equivalent consumed has increased from 1.8 to 2.8 pounds per 100 pounds of bodyweight. Due to greater forage consumption the grain to milk ratio for his high-producing cows can be widened from 1:2¾ to 1:5.

Mr. Christman's herd average jumped more than a ton of milk per cow to 13,310 pounds last year. A similar increase in forage intake occurred in the Corselius herd and others.

Production boosted . . .

When C. M. Wingert and Son of Indiana County followed their suggested feeding program, the average daily production of their cows rose from 40 pounds to 44 pounds, a 10 per cent gain. Their program called for feeding grain at a 1:3 ratio for cows producing over 40 pounds and a 1:4 ratio for cows producing under 40 pounds of milk daily. A 12 per cent grain mixture replaced the 15 per cent crude protein mix previously used.

At $5 per sample, the Wingert's forage testing costs amounted to $25. However, the **entire costs** of the program to them were **regained within three days** from increased milk production alone, not to mention savings in grain mixture.

This farm recently was added to our unit demonstration farm program. It was on farms such as this that our forage testing service was developed.

Forage testing has helped farmers to improve milk yield per cow at all levels of production. Often butterfat test also rises. Most of the herds mentioned, so far, have relatively high production levels. The results obtained by Kenneth Landes of Susquehanna County illustrate that lower-producing herds can benefit, also. This herd averaged about 8,000 pounds of 3.5 per cent milk last year.

33 per cent increase in milk . . .

By feeding according to his suggested program, this young dairyman raised production by a whopping 33 per cent, after allowances for differences in stage of lactation.

A 20 per cent grain mix is necessary for this herd which is fed sorghum silage and poor grass hay. Previously, a 16 per cent feed was used at a heavier rate of feeding than is now required for most cows.

Increased production per cow does not necessarily mean greater production per farm. Many dairymen can net as much from twenty 450-pound as from forty 350-pound cows.

Much of the improvement in the Landes herd can be attributed to the higher peak production of cows freshening recently. In all cases, Landes has been following closely the fresh-cow feeding schedule provided. It calls for feeding 12 pounds of grain daily beginning 7 days before *(Turn to page 580)*

The authors are dairy and agronomy specialists, respectively, at Pennsylvania State University.

Farm Flashes . . . .

Seasonal reminders and research notes for the dairyman

PREVENTS SPOILAGE IN TUB SILO

Some farmers owning tub silos have reported a little difficulty with spoilage around the 22-inch torpedo hole. As a means of correcting this situation, one farmer covered the

hole at the bottom with plastic before filling the silo. This has practically done away with spoilage in his silo.

When he was ready to start feeding the silage, he punched out the plastic. He observed also that as the silage passes through the torpedo hole twice each day it forms a slick, wet coating that seemed to seal the silage and thus helped to prevent spoilage.

THREE CUTTINGS THE MAXIMUM

Wisconsin agronomists say that three cutings of hay yearly are the most you should take off Wisconsin alfalfa fields.

For several years, tests have been made involving more frequent cuttings along with various cutting heights. With Vernal alfalfa, three cuttings yearly give more and higher-quality hay than the two cuttings which had been traditional with older varieties.

The yields were lower when hay was harvested four, five, or six times during the year, even though they avoided cutting during September and early October when plants are building up food reserves for winter.

Regardless of the frequency of cuttings, hay cut one inch above the ground yielded about the same as that cut three inches above the ground.

Cutting more often than three times a year reduced the amount of available carbohydrates stored in the plant roots in mid-November. This is the plant's winter food reserve. With low levels of carbohydrates, there is more winter injury, more winterkilling, and less hay for the following year.

Fall cutting is not recommended since this also reduces the winter food reserves in the plants which results in winterkilling and, therefore, lower yields.

CALVES NEED MORE THAN PASTURE

Calves should not be turned out to pasture until they are at least 6 months old and, if they are turned out that young, they should receive grain and hay at a normal rate until they are at least 10 months of age.

Since grass is 70 to 80 per cent moisture and the size of a young calf's stomach is limited, calves cannot eat enough grass to provide nutrients necessary for normal growth.

Small calves can be exercised on a dry lot, then started on pasture slowly after 6 months of age. Their intake of grain and hay should receive priority on pasture.

When heifers are used to eating grain and good hay, there is usually little difficulty in having them eat proper amounts of grain and hay, even though on high-quality pasture.

Heifers between the ages of 12 and 24 months usually develop at an acceptable rate on pasture alone, if it is of high quality. When pasture is poor, grain should be fed.

All heifers should receive grain several weeks before calving in order to put them in good shape for their first lactation.

BAND PHOSPHORUS NEAR SEED

Tests at the Missouri experiment station showed that banding phosphate fertilizer near seed proved effective in boosting corn yields.

Band treatments were compared with broadcast treatments in 1958 and 1959. The banded treatments consisted of 50 pounds of available phosphorus per acre banded near the seed each year. In the broadcast treatment, one application of 800 pounds of available phosphorus, as dicalcium phosphate, was mixed with the soil in the spring of 1958.

Corn with the banded treatment produced 115 bushels per acre, while that with the broadcast treatment produced 106 bushels. Corn getting no phosphorus produced only 62 bushels.

Last year corn that was band treated yielded 79 bushels per acre as compared with 70 bushels where the phosphorus was broadcast. The untreated corn again yielded only 62 bushels.

One of the reasons for the lower yields last year was that it was a dry season as compared to a season of well-distributed rainfall the previous year.

It still has not been determined just how much phosphorus should be used in the band treatment. However, it takes a minimum of one-half pound of phosphorus per bushel of harvested corn to replace that removed in the crop.

Banding all the phosphorus results in little, if any, buildup in the soil. To provide such a buildup, a broadcast application of phosphorus accompanied by a minimum of 20 to 30 pounds per acre banded is recommended. The broadcast treatment might consist of 100 pounds per acre of available phosphorus.

MYSTERY COMPOUND LOWERS APPETITE

It is believed that there is some unidentified organic compound formed during fermentation of grass-legume silage which decreases the appetite of dairy heifers.

Scientists L. A. Moore and J. W. Thomas of the U. S. Department of Agriculture Research Center say that isolation of this compound may make unwilted grass-legume silage as valuable as hay for feeding dairy animals. This assumes, of course, that the compound can be removed or its effects counteracted. The compound also affects the appetite of mature cows, causing a decrease in milk production, in some cases, but the effect is more marked in growing heifers.

Until more information is obtained, they suggest that farmers wilt their crops a few hours before ensiling, even though this involves mowing before chopping. It was found that heifers consumed about twice as much dry matter eating wilted silage as they did eating unwilted silage. In fact, there was little difference between consumption of heavily-wilted silage and hay. If silage is not wilted, some hay should be included.

Recent research has shown that reduced consumption of dry matter is not the result of excess water in the unwilted silage at feeding time. When water was added to hay before feeding to make it equal in moisture content to unwilted silage, or when the water content of silage was reduced or increased, the same amount of dry matter was consumed.

It was also thought palatability might be the answer because when heifers were fed hay soaked in silo seepage, their consumption decreased. However, when seepage was introduced directly into the stomachs, appetites also lessened, which proved taste was not the factor causing reduced consumption.

WHY DAIRY COWS LEAVE HOME

Reports from Michigan State University and the U. S. Department of Agriculture show that the average dairy cow leaves home when she is 5½ to 6 years old. Since she usually does not freshen for the first time until she is almost 2½ years old, the cow actually is in production for only 3 to 4 years.

Part of the 1959 study, in which losses from culling, low production, and other causes were disregarded, showed that of 1,800 herds involved, more than 7,100 cows were lost because of sterility, disease, and other ailments. Nearly one-third of that number were sold as non-breeders.

It appears that the number of non-breeders is rising steadily. It may be that farmers keep better fertility records than formerly, so fewer non-breeders escape unnoticed.

Also, it is felt that a dairyman with a large commercial herd may not try too hard to get high conception.

Mastitis, brucellosis, and bovine tuberculosis accounted for more than 27 per cent of the losses. Mastitis alone accounted for 16 per cent, while 3 per cent were lost because of brucellosis, and 8 per cent as the result of tuberculosis.

Physical injury, death, and milking difficulty were responsible for more than one-third of the total loss.

75 years ago...

Can you expect to get fair milk from cows that drink foul water? Can you make good butter from bad milk?

Professor Law of Cornell University examined the milk from cows that had access to water from stagnant pools and found it full of living organisms. The cows were in a feverish condition owing to their blood being charged with this living animalculae. Look to the drinking water of your cows. Do not water from stagnant pools.

W. D. Hoard

Improve SOIL CONDITIONS first

Acid soils should be limed, wet soils drained, and tillage improved.

by R. L. Cook

HOW uniform is your soil? If your farm is typical of most farms in the Lake States and surrounding areas it is anything but uniform. It probably includes sands and clay loams and most of the textures between.

Also, it probably varies in topography from rolling hills to flat plains and swamps. After your muck or peat swamp is drained it may turn out to be your very best soil! However, you must manage it differently than you do your upland mineral soils.

Take a look at the soils you have and see how their natural characteristics may be affecting nutrient release to plants and, therefore, the importance of fertilizers in your bid for top production. Perhaps there are some things you should do before you decide on a fertilizer purchase.

Or, perhaps there are some hazards too great to make top fertilizer investments a safe deal? Sometimes it is better to face the fact that a soil lies in a lower productive range, and point fertilizer practices toward a lower, more realistic goal. Net returns may thereby be greater.

Acid soils are infertile . . .

Soils of the Lake States are largely derived from limestone. They are acid because the basic ingredients have been leached out. These basic ingredients include calcium, potassium, and magnesium, all very critical plant foods.

Thus, it is not at all surprising that soils badly leached of these elements should lack in ability to supply nutrients to plants. In other words, they are infertile.

If your soil has been tested, you already know the hilly areas and those highest in sand and gravel are the most strongly acid. This is because water passes through them readily and the nutrients are leached away.

Soil tests tell how completely the leaching has progressed and how much limestone is needed to correct the condition. Remember though, the injury cannot be righted by applying only calcium limestone, if potassium and magnesium are also low.

Potash fertilizers are sure to be needed and maybe magnesium, which may be included in the fertilizer or applied as dolomitic limestone. The latter is cheaper and is a better buy than calcium stone if you need both calcium and magnesium.

Acid soils also are likely to be lacking in nitrogen because clovers and alfalfa fail to grow so the legume bacteria function poorly and little nitrogen is taken from the air.

Furthermore, the bacteria which take nitrogen from the air without the aid of a legume host plant cannot function in an acid soil. This is because they are heavy feeders on calcium.

As a result they sit idly by waiting for the farmer to bring a load of lime to the field while the unhappy corn plant starves for nitrogen and makes little growth.

Too much clay . . .

Real heavy clay soils are like a defunct bank; they may contain plenty of plant food but it is not in circulation. The crops starve because their roots do not effectively explore the tremendous soil surface present in that kind of a soil.

It is somewhat like the job you would have looking for a dozen ink dots on a bushel of soybeans as compared to your task if the dozen dots were on baseballs in the same sized container.

The soil test extracting solution finds the nutrient ions much more easily than does the plant roots. In other words, we must have a **higher chemical test on clay soils** than on sandy soils to be sure of having enough for the plants.

Likewise if we apply a given amount of plant food to a clay soil we have less assurance that our crop plants are going to be able to find and pick it up. Even if they do find it, the clay may hold it so firmly that the plant roots may not be able to take it away. This depends considerably on the balance which exists between the amount of that nutrient and the sum of all others in the soil.

In other words, nutrient balance is important. A certain number of pounds of available potassium might be sufficient for top yields in one soil but be entirely inadequate in another.

Soils need oxygen . . .

Very heavy clays are poorly aerated. Oxygen necessary for nutrient intake moves slowly to the roots, so slowly that plants may actually show signs of starvation when chemical tests indicate plenty in the soil. Drainage may help with aeration. Excess water drives out the air and slakes the soil into a puddled mass.

Again, it is easy to ruin a clay soil by working it too much or when it is too wet. Also, organic matter may be depleted. An increase is sure to loosen and crumble the soil mass and allow more rapid oxygen movement to the roots.

Organic matter is a very important ingredient on heavy clay soils. In fact, organic matter maintenance is a **must.**

Clays need phosphorus . . .

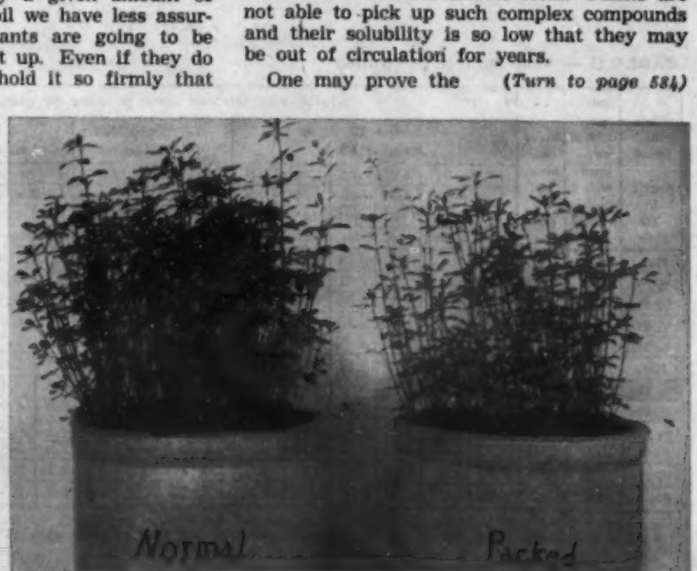
The phosphorus in commercial fertilizer is largely in the form of calcium and ammonium phosphates. They are soluble in water and highly reactive with certain soil minerals. Clay soils in the northern humid regions are high in hydrated iron oxides, minerals with great affinity for the phosphates in our fertilizers.

As soon as the fertilizer is applied and mixed with the soil a complex chemical reaction occurs and we say the phosphorus is "fixed" into an unavailable form. Plants are not able to pick up such complex compounds and their solubility is so low that they may be out of circulation for years.

One may prove the *(Turn to page 584)*

The author is head of soil science at Michigan State University.

CORN ON RIGHT came from a plot well supplied with nitrogen. Note long, well-filled ears. Left pile came from an equal-sized area where growing plants were badly "fired." Note the short, nubbin-shaped ears.



CLAY LOAM SOIL was poured loosely into left pot and packed into right pot. The alfalfa growing on packed soil was light-colored as if starved for nitrogen; soil bacteria were not active due to lack of air.

TABLE I — Boom Sprayer Calibration

Amt. from 4 nozzles in 40 rods	Gal. per acre	Acres per 50 gal.	MCPA or 2,4-D, amine or ester														
			Acid equiv., #/gallon					Acid equiv., #/gallon					Acid equiv., #/gallon				
			2.0	2.67	3.0	3.34	4.0	2.0	2.67	3.0	3.34	4.0	2.0	2.67	3.0	3.34	4.0
			½# per acre					½# per acre					1# per acre				
			Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.	Pts.
4 pints	5.0	10.0	10.0	7.5	6.7	6.0	5.0	20.0	15.0	13.3	12.0	10.0	40.0	30.0	26.6	24.0	20.0
4½ pints	5.6	8.9	8.9	6.7	5.9	5.3	4.5	17.8	13.3	11.9	10.6	8.9	35.6	26.6	23.8	21.2	17.8
5 pints	6.3	7.9	7.9	5.9	5.3	4.7	4.0	15.8	11.8	10.5	9.5	7.9	31.6	23.6	21.1	18.9	15.8
5½ pints	6.9	7.2	7.2	5.4	4.8	4.3	3.6	14.4	10.8	9.6	8.6	7.2	28.8	21.6	19.2	17.3	14.4
6 pints	7.5	6.6	6.6	5.0	4.3	4.0	3.3	13.2	9.9	8.8	7.9	6.6	26.4	19.8	17.6	15.8	13.2
6½ pints	8.1	6.1	6.1	4.6	4.1	3.7	3.0	12.2	9.1	8.1	7.3	6.1	24.4	18.3	16.3	14.6	12.2
7 pints	8.7	5.7	5.7	4.3	3.8	3.4	2.8	11.4	8.5	7.6	6.8	5.7	22.8	17.1	15.2	13.7	11.4
[illegible]			5.3	4.0	3.5	3.2	2.6	10.6	7.9	[illegible]	6.3	5.3	21.2	15.9	14.1	12.7	10.6
1 gallon	10.0	5.0	5.0	3.7	3.3	3.0	2.5	10.0	7.5	6.7	6.0	5.0	20.0	15.0	13.3	12.0	10.0
1 gal. ½ pt.	[illegible]	4.7	4.7	3.5	[illegible]	2.8	2.4	9.4	7.0	6.3	5.6	4.7	18.8	14.1	12.5	11.3	9.4
1 gal. 1 pt.	11.3	4.4	4.4	3.3	2.9	2.6	2.2	8.8	6.6	5.9	5.3	4.4	17.6	13.2	11.7	10.5	8.8
1 gal. 1½ pts.	11.9	4.2	4.2	3.1	2.8	2.5	2.1	8.4	6.3	5.6	5.0	4.2	16.8	12.6	11.2	10.0	8.4
1 gal. 2 pts.	12.5	4.0	4.0	3.0	2.7	2.4	2.0	8.0	6.0	5.3	4.8	4.0	16.0	12.0	10.7	9.6	8.0
1 gal. 2½ pts.	13.1	3.8	3.8	2.9	2.5	2.3	1.9	7.6	5.7	5.1	4.5	3.8	15.2	11.4	10.1	9.1	7.6
1 gal. 3 pts.	13.8	3.6	3.6	2.7	2.4	2.2	1.8	7.2	5.4	4.8	4.3	3.6	14.4	10.8	9.6	8.6	7.2
1 gal. 3½ pts.	14.4	3.5	3.5	2.6	2.3	2.1	1.7	7.0	5.2	4.7	4.2	3.5	14.0	10.5	9.3	8.4	7.0
1 gal. 4 pts.	15.0	3.3	3.3	2.5	2.2	2.0	1.6	6.6	4.9	4.4	4.0	3.3	13.2	9.9	8.8	7.9	6.6
1 gal. 5 pts.	16.2	3.1	3.1	2.3	2.1	1.9	1.5	6.2	4.6	4.1	3.7	3.1	12.4	9.3	8.3	7.4	6.2
1 gal. 6 pts.	17.5	2.8	2.8	2.1	1.9	1.7	1.4	5.6	4.2	3.7	3.4	2.8	11.2	8.4	7.5	6.7	5.6
1 gal. 7 pts.	18.7	2.7	2.7	2.0	1.8	1.6	1.3	5.4	4.0	3.6	3.2	2.7	10.8	8.1	7.2	6.5	5.4
2 gallons	20.0	2.5	2.5	1.9	1.7	1.5	1.2	5.0	3.7	3.3	3.0	2.5	10.0	7.5	6.7	6.0	5.0
2½ gallons	25.0	2.0	2.0	1.5	1.3	1.2	1.0	4.0	3.0	2.7	2.4	2.0	8.0	6.0	5.3	4.8	4.0
3 gallons	30.0	1.7	1.6	1.2	1.1	1.0	.8	3.2	2.4	2.1	1.9	1.6	6.4	4.8	4.3	3.8	3.2

Amt. from 4 nozzles in 40 rods	Gal. per acre	Acres per 50 gallons	Simazine Atrazine 80 W *			Dowpon **		Amino triazole & weed-azol **	Dinitro-amine 3#/gal. *	T.C.A. **	Hepta-chlor **	Meth-oxy-chlor **
			1#/A	2#/A	3#/A	5#/A	10#/A	8#/A	3#/A	10#/A	1pt./A	1qt./A
			Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Pints	Lbs.	Pints	Qts.
4 pints	5.0	10.0	Large rates needed to avoid clogging			Not recommended at low gallonage	Not recommended at low gallonage	Not recommended at low gallonage	Large rates needed to avoid burning		10.0	10.0
4½ pints	5.6	8.9									8.9	8.9
5 pints	6.3	7.9									7.9	7.9
5½ pints	6.9	7.2									7.2	7.2
6 pints	7.5	6.6									6.6	6.6
6½ pints	8.1	6.1									6.1	6.1
7 pints	8.7	5.7									5.7	5.7
7½ pints	9.4	5.3									5.3	5.3
1 gallon	10.0	5.0	6.2	12.5	18.7	25.0	50.0			50.0	5.0	5.0
1 gal. ½ pt.	10.6	4.7	5.9	11.8	17.6	23.5	47.0			47.0	4.7	4.7
1 gal. 1 pint	11.3	4.4	5.5	11.0	16.5	22.0	44.0			44.0	4.4	4.4
1 gal. 1½ pts.	11.9	4.2	5.3	10.5	15.8	21.0	42.0			42.0	4.2	4.2
1 gal. 2 pts.	12.5	4.0	5.0	10.0	15.0	20.0	40.0			40.0	4.0	4.0
1 gal. 2½ pts.	13.1	3.8	4.8	9.5	14.2	19.0	38.0			38.0	3.8	3.8
1 gal. 3 pts.	13.8	3.6	4.5	9.0	13.5	18.0	36.0			36.0	3.6	3.6
1 gal. 3½ pts.	14.4	3.5	4.4	8.8	13.1	17.5	35.0			35.0	3.5	3.5
1 gal. 4 pts.	15.0	3.3	4.1	8.3	12.4	16.5	33.0			33.0	3.3	3.3
1 gal. 5 pts.	16.2	3.1	3.9	7.8	11.6	15.5	31.0			31.0	3.1	3.1
1 gal. 6 pts.	17.5	2.8	3.5	7.0	10.5	14.0	28.0			28.0	2.8	2.8
1 gal. 7 pts.	18.7	2.7	3.4	6.8	10.1	13.5	27.0			27.0	2.7	2.7
2 gallons	20.0	2.5	3.1	6.3	9.4	12.5	25.0	20.0	20.0	25.0	2.5	2.5
2½ gallons	25.0	2.0	2.5	5.0	7.5	10.0	20.0	16.0	16.0	20.0	2.0	2.0
3 gallons	30.0	1.7	2.1	4.3	6.4	8.5	17.0	13.6	13.6	17.0	1.7	1.7

* Rate refers to the active ingredient per acre as usually specified.
** Rate refers to the material as purchased.

SPRAY MATERIAL needed for 50 gallons of spray can be determined for a boom sprayer by catching spray from four nozzles in time equivalent to driving 40 rods, based on 20-inch nozzle spacing.

TABLE II — Band Sprayer Calibration

Pints of spray 1 nozzle in 20 rods	Gals. per acre of crop-land with 1 nozzle per 40" row	Acres covered by 50 gal.	Spray material (add water to make 50 gallons)															
			Simazine 80 W. or Atrazine 80 W.						3# per gallon Dinitro Amine				2,4-D 4# acid equiv./gal.				Randox 4#/gallon	
			1#/acre(1)		2#/acre(1)		3#/acre(1)		6#/acre(2)		9#/acre(2)		1½#/acre(3)		2#/acre(3)		4#/acre	
			Band width		Band width		Band width		Band width		Band width		Band width		Band width		Band width	
			10"	13"	10"	13"	10"	13"	10"	13"	10"	13"	10"	13"	10"	13"	10"	13"
			lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	gals.	gals.	gals.	gals.	pints	pints	pints	pints	pints	pints
1 Pint	5.0	10.0	3.13	4.17	6.25	8.34	9.37	12.50	5.0	6.7	7.5	10.0	7.5	10.0	10.0	13.3	20.0	26.7
1⅛ Pts.	5.6	8.9	2.78	3.71	5.55	7.41	8.35	11.10	4.5	6.0	6.7	8.9	6.7	8.9	8.9	11.9	18.0	24.0
1¼ Pts.	6.25	8.0	2.50	3.33	5.00	6.66	7.50	9.98	4.0	5.3	6.0	8.0	6.0	8.0	8.0	10.7	16.0	21.3
1½ Pts.	7.5	6.6	2.06	2.75	4.12	5.50	6.20	8.24	3.3	4.4	5.0	6.6	5.0	6.6	6.6	8.8	13.2	17.6
1¾ Pts.	8.75	5.7	1.78	2.37	3.56	4.75	5.34	7.12	2.8	3.8	4.3	5.7	4.3	5.7	5.7	7.6	11.4	15.2
2 Pints	10.0	5.0	1.56	2.08	3.12	4.17	4.68	6.24	2.5	3.3	3.7	5.0	3.7	5.0	5.0	6.7	10.0	13.3
[illegible]			1.38	1.83	[illegible]	3.66	4.13	5.50	2.2	2.9	3.3	4.4	3.3	4.4	4.4	5.9	8.8	11.7
2½ Pts.	12.5	4.0	1.25	1.67	2.50	3.33	3.75	5.0	2.0	2.7	3.0	4.0	3.0	4.0	4.0	5.3	8.0	10.7
2¾ Pts.	13.75	3.6	1.12	1.50	2.25	3.00	3.37	4.50	1.8	2.4	2.7	3.6	2.7	3.6	3.6	4.8	7.2	9.6
3 Pints	15.0	3.3	1.03	1.38	2.06	2.75	3.10	4.12	1.6	2.2	2.5	3.3	2.5	3.3	3.3	4.4	6.6	8.8
3½ Pts.	17.5	2.8	.87	1.17	1.75	2.33	2.63	3.50	1.4	1.9	2.1	2.8	2.1	2.8	2.8	3.7	5.6	7.5
4 Pints	20.0	2.5	.78	1.04	1.56	2.08	2.34	3.13	1.2	1.7	1.9	2.5	1.9	2.5	2.5	3.3	5.0	6.7

(1) Rate refers to the technical material when applied broadcast; one-fourth as much material per acre is used with 10-inch band and one-third as much material per acre is used with 13-inch band.
(2) Rate refers to the active ingredient per acre when applied broadcast.
(3) Rate refers to the #/acre of acid equivalent when applied broadcast.

FOR 12-TO 14-INCH BANDS attach spray nozzle behind each planter press wheel. To correct gallons per acre column for other row widths, multiply gallons listed by 40; divide by desired width.

Know how to calibrate your sprayer

Whether you have a boom, boomless, or band sprayer, there are certain steps you must follow to get the right mixture. Follow manufacturer's directions.

by O. I. Berge

THE crackdown on chemicals in food makes it very important this year that we use extreme care in their application. We must not only select the proper chemical and apply it at the proper time, but we also must apply it in the proper amount.

If we apply too little chemical, money is usually wasted. To apply too much may not only be a waste of money in excess chemical costs, but can often mean disastrous crop injury as well.

Calibration of a sprayer is simply a method of running a test or tests of sprayer output so that the rate per acre can be predicted.

Application rate in spraying is affected by speed, pressure, nozzle opening, and nozzle spacing. All of these factors must be controlled during the checking process at the same level to be used later in field operation.

Viscosity or thickness of liquid sprayed also affects the discharge. Where the spray material is considerably different from water in viscosity, the test should be made with the liquid to be sprayed.

Sprayers should be checked occasionally as they are used, since nozzle wear increases the rate considerably.

Here are the steps . . .

1. **Measure out a 40-rod distance** (660 feet). Do this preferably in a field rather than on a hard road as speed may be different on the hard surface of the road.

2. **Determine the amount of spray discharged** in going 40 rods at the usual rate of speed and pressure as when spraying crops. This may be accomplished either by:

a) Starting with a full tank of spray, measuring the amount to fill the tank after spraying for 40 rods, or

b) timing the 40-rod trip with the sprayer

The author is an extension agricultural engineer at the University of Wisconsin.

MIXING CHEMICAL AND WATER after calibrating for correct amount per acre. Too little chemical is money wasted; too much can be disastrous.

not in operation, then measuring the spray used for that same length of time at the usual operating pressure. (A milk can or other convenient measure may be employed for this.)

Then use this formula:

$$\frac{\text{gallons used in 40 rods} \times 66^{*} = \text{gallons per acre}}{\text{swath width in feet}}$$

Example: If the sprayer discharged 3.25 gallons in 40 rods, and the swatch width was 26 feet:

$$\frac{3.25 \times 66}{26} = 8.25 \text{ gallons per acre}$$

*66 is the factor used at all times when the 40-rod travel distance is used.

If the rate is higher than desired, it may be reduced by:

1. Increasing speed.
2. Reducing pressure.
3. Changing to smaller nozzles.

If rate is lower than desired, it may be increased by:

1. Reducing speed.
2. Increasing pressure.
3. Changing to larger nozzles.

Tests should be repeated if speed, pressure, or nozzle is changed.

For the boom sprayer . . .

Table I has been worked out for the calibration of boom-type sprayers. It enables you to determine the amount of spray material to use in making up 50 gallons of spray in accordance with the calibration of the sprayer. The chart is based on catching the spray from 4 nozzles in the time equivalent to driving 40 rods. It is based on 20-inch nozzle spacing.

STEP 1. Measure out 40 rods (660 feet) and determine the time required to drive the sprayer this distance using the same gear and throttle setting you will use when spraying.

STEP 2. Operate the sprayer in a stationary position and adjust the pressure to the setting that will be used when spraying (ordinarily 30 pounds). The tractor throttle should be at the same setting to be used in spraying.

STEP 3. Catch the spray from 4 nozzles for the time determined in Step 1.

STEP 4. Compare the amount caught from each nozzle, which should be the same. If it is not the same, clean or change nozzles and recheck. Pour the spray caught from the four nozzles into a container and measure total to the nearest one-half pint.

STEP 5. Consult recommendations of weed or insect control circular, as to the amount of chemical per acre. Also look at the label of the chemical as to the concentrations which are stated as the pounds acid equivalent or active ingredient per gallon.

STEP 6. Turn to that part of Table I which lists the chemical you will use. Go down the left hand column to the number of pints caught from 4 nozzles in Step 4. In this line and in one of the columns to the right in the table will be found the amount of spray to add to make up 50 gallons of spray mixture.

For example, if the amount of spray caught is 7½ pints, the gallons per acre rate is 9.4. The acres covered with 50 gallons should be 5.3. If using 2,4-D at ½ pound per acre and using material with 3 pounds acid equivalent per gallon, the table tells you to use 7.1 pints to make up 50 gallons of spray material.

To make up 100 gallons of spray, use double the amount of chemical. To make up 25 gallons of spray, use half the amount of the chemical listed in the table.

For a 19-inch nozzle spacing, the amount of spray material may be reduced by 5 per cent, or the total amount of spray increased by 5 per cent. Thus, making up 52.5 gallons of spray instead of 50, will give the correct dilution for 19-inch nozzle spacings. Filling a 54-gallon drum in vertical position within 2.5 inches of the top, will be 50 gallons; within 1 inch of the top, 52.5 gallons. Each inch is about 1.7 gallons.

For band spraying . . .

The practice of band spraying frequently is employed for the application of expensive chemicals. A typical situation is the attachment of a spray nozzle behind each corn planter press wheel.

Table II has been prepared to determine, on the basis of catching the spray from one nozzle, the corresponding rate in gallons per acre of crop land, the acres covered by 50 gallons, and the amount of various spray materials to make up 50 gallons of spray, depending on band width and the application rate desired.

1. Determine pints of spray put out by 1 nozzle in 20 rods. For example, 2¼ pints. (20 rods = 330 feet).
2. Go down left hand column to 2¼ pints.
3. Across to the right from 2¼ pints, second column, is rate per acre with 40-inch rows. Find 11.25 gallons per acre.
4. In next column across, find acres covered by 50 gallons — 4.4 acres.
5. If simazine 80W is to be applied at 2 pounds per acre in a 10-inch band, look under the sixth column from the left which has this heading, and in line with the pints caught (2¼ in this example), find 2.75 pounds. This is the pounds of simazine 80W to add to 50 gallons, which will give the desired rate per acre in the 10-inch band.
6. The table has been made out for Dinitro, Randox, and 2,4-D. In case of 2,4-D, the material shown has 4 pounds acid equivalent per gallon.

To correct the gallons-per-acre column for other row widths, multiply the gallons now listed by 40 and divide *(Turn to page 579)*

SIRE'S WORTH as a transmitter of milk producing ability will be known soon and accurately.

More reliable SIRE PROOFS coming!

Huge electronic machines break time and labor barrier, provide sire proofs never before possible, except in rare cases.

by J. Frank Kendrick

AUTOMATION is now being used to compile for U.S. dairy farmers the most complete and reliable proved sire records possible. Beginning about May 10, 91 miles of magnetic tape started rolling through huge electronic data processing equipment in New Orleans. The rolling of that tape opened a new era in sire proving and herd improvement in this country.

Breeders and geneticists have long known that a daughter-dam comparison on a sire only opens the door to knowledge about the sire's genetic worth. A 500-pound record, obviously, means much more than no record at all. But records result not from just breeding.

The quality of the feed and the skill of the herdsman may have more influence on the record than transmitting ability of the sire.

How then can a breeder or an artificial breeding organization measure the value of a bull?

Only by long, laborious hand calculations and investigations can the influence of feed and management be measured. Certainly it was practically an impossibility to make such calculations on all sires proved each year in the United States.

Now with the aid of a high-speed, electronic data processing magnetic tape machine the physical roadblock has been broken. The fabulous IBM-705-III can "look over" a master file of over six million DHIA records in less than six working days!

It can, at the same time, update this file with approximately 900,000 records annually as current lactation records are reported.

It can select and assemble dam and daughter records by sire.

It can compare these records with the stablemates of the daughter.

Then it processes the data and compiles proved sire records, printing them at the rate of 600 lines per minute!

Of course, automation is not new to herd testing. Electronic data processing and computing machines have been performing the day-to-day calculation work of DHIA supervisors in some states.

As reported in Hoard's Dairyman, February 10, 1958, there are state or regional DHIA computing centers now providing more than 30 per cent of the DHIA members of the country with machine-calculated, complete, month-to-month dairy records. This rapid shift to machine calculating indicates that practically all records will be calculated in computing centers within a few years.

Now with sire proving going electronic we have streamlined the entire herd improvement program on a scale never dreamed possible a short 10 to 15 years ago.

What does all this mean to dairy farmers?

Automation of proved sire records will provide dairymen with more reliable data and it will be up to date. At the earliest possible hour these data will be available to farmers for selecting herd sires for the future.

It will be of tremendous benefit, too, in that it will provide sire selection committees of artificial insemination organizations with more complete information to aid them in the selection of their sires. They will have greater assurance of success than ever before.

Fortunately, the Department of Agriculture had in the New Orleans office of the Commodity Stabilization Service the desired 705-III equipment. It was made available to the dairy herd improvement section of the dairy branch of U.S.D.A. on a rental basis and is now being used on a night shift operation.

The program at present is to have the machine retabulate a proved sire record (that is, reprove a sire) when 50 per cent additional dam-daughter comparisons have been reported. Every time these requirements are met the sire will be reproved automatically, using all data ever reported for the sire.

A sample of the new proved sire record is shown on the opposite page. Note that it includes summary data on natural service daughters, artificial daughters, and the combined artificial and natural service daughters.

Further, and very important, is the production data on the stablemates of the daughters of the sire. These are records of other heifers **not sired** by the bull being proved. Then you have the yearly herd average and, in addition, you have an indication of the feeding level so that this factor can be taken into consideration in evaluating the sire.

In addition to the compilation of these records, it is now possible to make extensive tabulations and analyses of data on sires used in artificial breeding studs. These will be made to provide information urgently needed to guide the breeding programs of the artificial breeding organizations.

Of great promise to those of us interested in dairy cattle breeding is the opportunity for research with the new equipment. We can do so much more with the new equipment than we could before with the smaller units of computing equipment.

The new automated sire proving procedures in the department are a co-ordinated part of electronic DHIA record keeping system now being used in the states. There, month-to-month records are being electronically computed in state or regional DHIA computing centers located in Illinois, Iowa, Michigan, New York, North Carolina, Ohio, Pennsylvania, Utah, Washington, and Wisconsin.

While it is impossible to accurately predict the benefits which will accrue to dairymen from this breakthrough in sire proving, even the most conservative person can see a further marked improvement coming in the milk producing efficiency of our herds.

CONTROL CENTER of IBM-705-III is this desk. From here, E. W. Artus, Jr., can supervise the electronic machine which reviews over 6,000,000 DHIA records in less than six working days.

600 LINES PER MINUTE are printed as the new sire proofs roll from tape printer under watchful eye of head programmer, Mrs. Doris Keevil.

The author is head of the dairy herd improvement section, agricultural research service, U.S. Department of Agriculture.

DHIA PROVED SIRE RECORD FOR BREED HOLSTEIN

U. S. DEPT. OF AGRICULTURE - AGRICULTURAL RESEARCH SERVICE
DAIRY CATTLE RESEARCH BRANCH - DAIRY HERD IMPROVEMENT SECTION

999999 SAMPLE PROVED SIRE RECORD — RECORDS FROM STATES [redacted] 33-010 35-005

SIRE NUMBER NAME

BORN, 6-15-49 SIRE, 888888 DAM, 777777

AB SERVICE [redacted] TABULATED 12-15-57 PREVIOUS TABULATION,

SUMMARY	RECORDS OF DAMS OF DAUGHTERS AND DAUGHTERS OF SIRE: IDENTIFICATION NUMBER	AB	TYPE	[redacted]	DATE OF BIRTH	DAYS IN MILK NUMBER	RECORDS AVERAGED NUMBER	MILK AVERAGE POUNDS	FAT PERCENT	FAT AVERAGE POUNDS	CAR.	[redacted]	305 - DAY CONTEMPORARY HERD AVERAGE: RECORDS NUMBER	MILK POUNDS	FAT POUNDS	YEARLY HERD AVERAGE: RECORDS NUMBER	MILK POUNDS	FAT POUNDS
14 NON-AB	DAU ------	-	-	85	---------	--	25	13902	3.8	522		97	25	13667	492	39	13889	500
13 NON-AB	DAU ------	-	-	85	---------	--	23	13864	3.8	527		96	25	13667	492	40	13861	499
13	DAMS -----	-	-	84	---------	--	36	13765	3.8	522		95	DIFF. ALL DAU & HERD DATA					
DIFF 12-08-12	------	-	-	1	---------	--		[redacted]	.0	[redacted]		1						
18 AB DAU	----------	-	-	85	---------	--	23	14025	3.6	509		98	24	14056	506	38	14306	515
17 AB DAU	----------	-	-	85	---------	--	21	14033	3.6	510		99	24	14056	506	41	14333	516
17	DAMS----------	-	-	83	---------	--	31	13288	3.7	487		97	DIFF. ALL DAU & HERD DATA					
DIFF 11-10-12	------	-	-	2	---------	--		745	.1-	23		2		31-	3		281-	6-
32 ALL DAU	---------	-	-	85	---------	--	48	13964	3.7	516		98	25	13861	499	37	14167	510
30 ALL DAU	---------	-	-	85	---------	--	44	13960	3.7	517		97	24	13889	500	40	14278	514
30 ALL DAMS	--------	-	-	84	---------	--	67	13495	3.7	502		96	DIFF. ALL DAU & HERD DATA					
DIFF 23-18-24	------	-	-	1	---------	--		465	.0	15		1		103	17		203-	6
HERD CODE																		
32500591	1855980	-	3	84	10-10-35	305	3	15806	3.3	527								
32500591	3284006	A	3	82	10-10-50	305	1	15977	3.7	599			32	15528	559	35	15667	564
32430860	2497395	-	3	80	7-31-44	302	3	16986	3.7	623								
32500591	3272791	-	3	90	11-30-49	305	2	15870	4.1	646			36	15667	564	36	16167	582
32430860	2497395	-	3	80	7-31-44	302	3	16986	3.7	623								
32500533	3349862	A	3	81	11-28-50	305	2	18543	4.0	737			32	13528	487	41	15833	570
32430860	2425344	-	3	86	12-18-41	291	6	12169	3.7	452								
35640927	35AAB4269	-	3	90	7-24-50	301	2	14275	3.8	527			26	13654	483	39	14286	522
33260865	2497390	-	3	80	6-30-44	302	2	16869	3.7	632								
32500533	3546972	A	3	85	11-28-50	305	1	18549	4.0	736			32	13528	487	41	15833	570
33260867	2395055	-	3	87	11-30-41	301	6	11674	3.6	417								
33500534	3152765	A	3	90	8-29-48	305	1	9073	3.3	296			25	13345	465	45	14542	478
35170985	2472904	-	3	87	11-29-43	295	7	12760	3.7	467								
33160113	2923941	-	3	83	11-03-47	305	1	11421	3.7	426			23	14167	493	35	14345	432
33180742	2472904	-	3	87	11-29-43	295	5	12760	3.7	467								
35110643	2923342	-	3	85	11-03-47	305	5	13519	3.8	513			27	14474	505	37	15142	512

NEW PROVED SIRE RECORD FORM for the sire 999999 gives the following information:

At the top of the form is the breed, registration number, name of sire, birth date, sire, and dam. The sire is in A.B. service (35-05) — the "35" indicates Wisconsin and "5" is the stud number. Each state has a code number and each stud in the state is coded.

After "records from states" are listed the state from which data included in the sire record were received and the number of records from each state. For example, "32-015" indicates that 15 records included in the sire record were from Indiana.

In the top portion of the body of the form are summaries of the dam-and-daughter data of the sire.

The first summary is of non-A.B. daughters or a "natural proof." The sire had 14 non-A.B. daughters, 13 of which had dams with reported production records. The data "Diff. 12-08-12" indicates that 12 of the daughters excelled their dams in milk production, 8 excelled their dams in butterfat test, and 12 excelled their dams in butterfat production.

Type score . . .

The score "85" is the average type score of those daughters that have been officially classified; "84" is average score of the dams.

Number of records averaged . . .

The 14 daughters, collectively, had 25 lactation records which were first averaged for each daughter to obtain the average production of all daughters. The 13 daughters with dams averaged 13,864 pounds of milk, testing 3.8 per cent butterfat, and 527 pounds of butterfat. Compared to the production of their dams, they excelled in milk production by 99 pounds and butterfat by 5 pounds.

When feed data are reported, a feeding index is calculated in an attempt to estimate the feed input to the daughters of the sire and to their dams. Amount of feed fed and feed requirements have been calculated on a net energy basis.

To obtain the index, estimated net energy fed has been divided by the total estimated requirement for maintenance and production.

Theoretically, a feeding index of less than 100 indicates the animals, as a group, were fed below requirements.

The average feed index for the daughters, as a group, and for dams, as a group, may be useful in indicating if feeding levels for the dams and daughters were comparable.

305-day contemporary herd average . . .

Data under this heading consist of the average production level of the paternally unrelated stablemates of the daughters that completed production records at the same time as the daughters.

The contemporary averages provide some indication of the average producing ability of the stablemates and the environmental conditions of the herd during the approximate period the lactation records of the daughters listed were made. In the above example they excelled their stablemates by 235 pounds of milk and 30 pounds of butterfat.

Yearly herd average . . .

Data under this heading indicate, on a cow-year basis, the yearly average production of the entire herd. These data may be used with the "contemporary average data" in appraising the environment of a herd.

For a few years, in some cases where uniform herd codes are not available to identify earlier lactation records by herds, yearly average may be the only herd data which can be included in a sire record.

As with the "contemporary average" the "yearly average" provides some indication of the producing ability of the herd, as a whole, and the environmental conditions of the herd during the approximate period the records of the daughters listed were made.

The yearly herd average is increased by 9 per cent that it may be more comparable to the standardized (mature equivalent) average data of the daughter data included in the record. In the above example, the daughters of the sire excelled the adjusted herd average by 13 pounds of milk and 22 pounds of butterfat.

The explanation of the second summary of 18 A.B. daughters is the same as for the non-A.B. daughters. This summary includes only the records of daughters that are A.B. progeny.

In the lower part of the form, the individual dam-and-daughter comparisons are listed. The comparisons are listed by pairs. The data on the first line are for the dam of the daughter; the data on the second line are for the daughter.

In the first column is listed the herd code of the herd from which the lactation records were reported. The identification number of the dams and daughters is listed in the second column. If the dam or daughter is an A.B. progeny, it is indicated by an "A" in the third column.

The remainder of the data is explained by the column headings at the top of the form, with the exception of the column headed "CAR." This refers to conditions affecting record. If a production record is affected by the cow being injured, having mastitis, and so forth, a code indicating the conditions would be listed.

Individual dam-and-daughter comparisons up to 21 pairs will be listed in the proved sire record. After 21 comparisons have been listed for a sire, when the sire is reproved, only the summary data at the top of the form are printed.

As mentioned on the opposite page, research now planned may suggest methods for further improving the proved sire record and its reliability in indicating the breeding worth of sires.

THE END

FEEDING GOOD ALFALFA HAY and good concentrate at the normal rate (left) is more profitable than feeding poor hay and any level of concentrate. Feeding poor hay and twice as much concentrate as recommended (right) was more profitable than feeding lower levels of concentrate.

Poor hay dries 'em up!

You can't afford to feed poor-quality hay with normal amounts of grain. Such a program could drive you out of the dairy business. Here are the facts.

by Don R. Jacobson

Animal performance during the 112-day experiment

	Good hay good conc.	Poor hay good conc.	Poor hay 150% conc.	Poor hay 200% conc.
Av. milk production preliminary 2 weeks (lb./day)	36.7	36.3	36.5	36.4
Av. milk production final 2 weeks (lb./day)	26.4	14.1	20.7	32.7
Av. drop in milk production (%)	28.1	61.2	43.3	10.2
28-day persistency of milk production	93.2	80.3	87.1	99.6
Av. body weight	1045	1051	1072	1030
Av. change in body weight (lb./day)	-0.3	-1.0	-0.3	0.4
Av. hay consumption (lb./day)	31.0	13.7	12.1	6.6
Av. TDN of ration consumed (%)	64.8	59.8	61.8	64.5
Concentrate mix consumed (lb./day/cow)	**7.7**	**10.8**	**18.0**	**28.9**
Av. TDN required (Calculated) (lb./day)	16.9	14.0	16.1	18.4
Av. TDN supplied (determined) (lb./day)	22.5	13.3	16.7	20.3
Excess (lb./day)	5.6	-0.7	0.6	1.9
Return above feed cost per cow*	$74.19	$51.61	$54.08	$56.50
Return above feed cost per cow for the fourth 28-day period when the differences due to feeding had occurred.	**$16.01**	**$ 8.53**	**$10.28**	**$13.53**

* Prices employed were: Good hay, $30/T; low-quality orchard grass hay, $20/T; good concentrate mix, $70/T; milk, $4.75/cwt. 4 per cent FCM.

DURING less than one-third of their lactation, an experimental group of cows dropped 59 per cent in milk production — from 46 pounds down to 19 pounds per day. Why? Because they were fed poor hay, all they wanted to eat. They were also fed good concentrate at the recommended rate.

A comparable group of experimental cows dropped only 15 per cent in milk production — from 42 down to 36 pounds per day. They were fed good alfalfa hay and essentially the same concentrate at the level recommended for the usual rate of feeding good hay.

Theoretically, both groups of cows should have maintained milk production equally well. Both groups received from 4 to 6 pounds of total digestible nutrients (TDN) per day more than is required.

Because of these startling results, a second experiment was conducted the next winter season (1958-59). Larger amounts of good concentrate were fed to determine whether milk production could be maintained when poor hay is fed.

Four similar groups of cows (3 Holsteins and 3 Jerseys in each group) were fed:

Good alfalfa hay free-choice and good concentrate at the recommended rate for very liberal feeding of good roughage for the first group.

The other three groups received poor hay free-choice, but different levels of concentrate. The second group received the recommended level of good concentrate when feeding poor roughage.

The third group received 150 per cent of this recommendation and the fourth group, 200 per cent of the recommended level.

Heavy grain held milk . . .

The results show that the drastic drop in milk production that occurs when feeding poor hay can be prevented by feeding unusually large quantities of good-quality concentrate. It would appear that about 175 per cent of the recommended level of grain feeding would maintain milk production at the normal rate of decline.

In each of the experiments, the group of cows that has maintained the highest persistency of milk production also has gained the most body weight, indicating that they are rather closely related.

Little poor hay consumed . . .

The data given for this experiment show that very little poor hay was consumed. Furthermore, as the level of grain feeding increased, the consumption of poor hay went down to just 6.6 pounds per day.

Two Holsteins were fed over 40 pounds of grain per day and three Jerseys were fed over 24 pounds grain per day. In starting these cows on the experiment, the Holsteins were fed 24 pounds and the Jerseys 20 pounds grain the first day. The Holsteins were increased 3 pounds per day and the Jerseys 2 pounds per day to their indicated level of intake. In 6 days, all cows were consuming their regular allowance without any ill effect.

The temporary drop in milk production early in the experiment for the group receiving poor hay and 200 per cent concentrate was partly attributable to taking 6 days to bring some of these cows up to regular grain intake, partly to changing their ration so drastically.

In both experiments where poor hay was fed, TDN intake was about equal to or exceeded TDN required. Yet the cows dropped drastically in production showing that **the TDN system greatly overrates the value of poor hay** for milk production.

Good hay most profitable . . .

An economic appraisal of these data indicates that for the prices employed, the feeding of good alfalfa hay and the recommended level of grain is the most profitable practice. However, if poor-quality hay must be fed, it would be much more profitable to feed from 150 to 200 per cent more grain than is commonly recommended. Feeding more grain is necessary to maintain milk production.

Even though group 4 produced more milk than group 1, it was not as profitable because cost of energy in the form of good hay was less than in the form of concentrate.

A dairyman simply can't afford to feed the kind of ration that keeps his cows from producing at a level somewhere near their inherited capacity. This is so because efficiency (and profitability even more so) drops rapidly as level of milk production per cow drops. **THE END**

The author is associate professor of dairying, University of Kentucky.

Why does motor oil get dirty?

"Saving" a few dollars a year by overly extending crankcase drain periods may mean repair bills that will "break your bank account."

by D. W. Bates

"HOW often should I change oil in my tractor, truck, or automobile?" is an age-old question. This is somewhat like asking, "How much feed do you give a dairy cow?" To give a satisfactory answer to the latter, it must be known whether or not the cow is giving milk and, if so, how much, her size, and possibly the stage of lactation.

The reason for draining crankcase oil is to get rid of contaminants that accumulate in it. These contaminants are of two types — chemical and physical. The type and amount of each will depend to a large extent upon the mechanical condition of the engine and how it is operated and maintained.

Chemical contaminants are those which form in the motor as a result of the combustion process. Physical contaminants are dust and dirt which may enter the motor in a variety of ways.

Engine oil really "takes a beating." Temperatures may range from below zero in the crankcase at time of starting on a cold day, to hundreds of degrees on the cylinder walls soon after starting. Pressures exerted on oil in the bearings may be thousands of pounds per square inch. The engine may be operated at full load, part load, in a dusty field, or on a smooth, hard-surfaced road.

For each pound of fuel burned in the motor, approximately one pound of water is produced in the form of vapor. Also, in the combustion process, small amounts of carbonic acid, sulfuric and sulfurous acids, lead sulfate, and various other compounds may be formed. Most of these compounds are expelled with the exhaust gases but small quantities condense on the cylinder walls and can cause corrosion of the highly-polished surfaces. They also pass into the crankcase as blow-by gases where they can cause damage to bearing surfaces, if allowed to concentrate too highly in the engine oil.

Cold operation damaging . . .

One of the greatest causes of motor oil contamination is low temperature operation. When the steam vapor, formed by combustion, strikes cold cylinder walls and other internal parts of the engine, water is formed. Part of this water ends up in the crankcase.

All of the gasoline entering a cold combustion chamber is not vaporized. The fuel remaining in the liquid form does not burn readily. During the first few minutes of operation, the unburned fuel mixes with oil on the cylinder walls and passes into the crankcase, thus diluting the oil.

Under low temperature operation, the mixture of water, oil, and oil contaminants form a sludge about the consistency of mayonnaise. This sludge tends to settle out in the oil pan. If allowed to accumulate in sufficient quantities, it will block the oil pump screen or plug the oil line. Sludge accumulation is greatest where oil flow is least. That is why heavy deposits are often found in the valve compartment and on the cover plates of neglected engines.

Besides contaminating the oil, cold operation causes excessive wear of the engine. This comes from the action of the piston rings rubbing over the corroded surface of the cylinder walls.

To prevent condensation from forming, cylinder wall temperatures must be above the boiling point of water. At one-fourth load the cylinder wall temperature will be about 50 degrees higher than the water jacket temperature. At full load, the difference may be 70 degrees or more. An engine running at light load will then be more subject to corrosion and wear than one running at full load, unless the temperature of the cooling water is increased.

For spark ignition engines, a water jacket temperature of 165 to 185 degrees is recommended. For diesel engines, this temperature should be 190 degrees or more. Make sure that thermostats are of the correct heat range and that they are operating properly in summer as well as in winter.

Another practice to be guarded against is cold weather operation of short duration where the motor does not get fully warmed up. A motor started in cold weather should be run long enough to get it up to proper operating temperature. By doing this, water, fuel fractions, and volatile acids which formed during the warm-up period will vaporize and pass out through the crankcase breather.

It is essential, then, that the crankcase breather be kept open so that there can be an adequate movement of air in and out of the crankcase. In sub-zero weather, check frequently to see that the breather pipe does not become clogged with ice formed from condensing vapors.

The old idea that a "cool-running" engine is a good one is false. With the cool-running engine, water jacket temperatures may not exceed 120 degrees and condensation will take place continuously. At these low temperatures there is a continuous buildup of contamination in the crankcase. It is one of the most severe operating conditions to which a motor can be subjected.

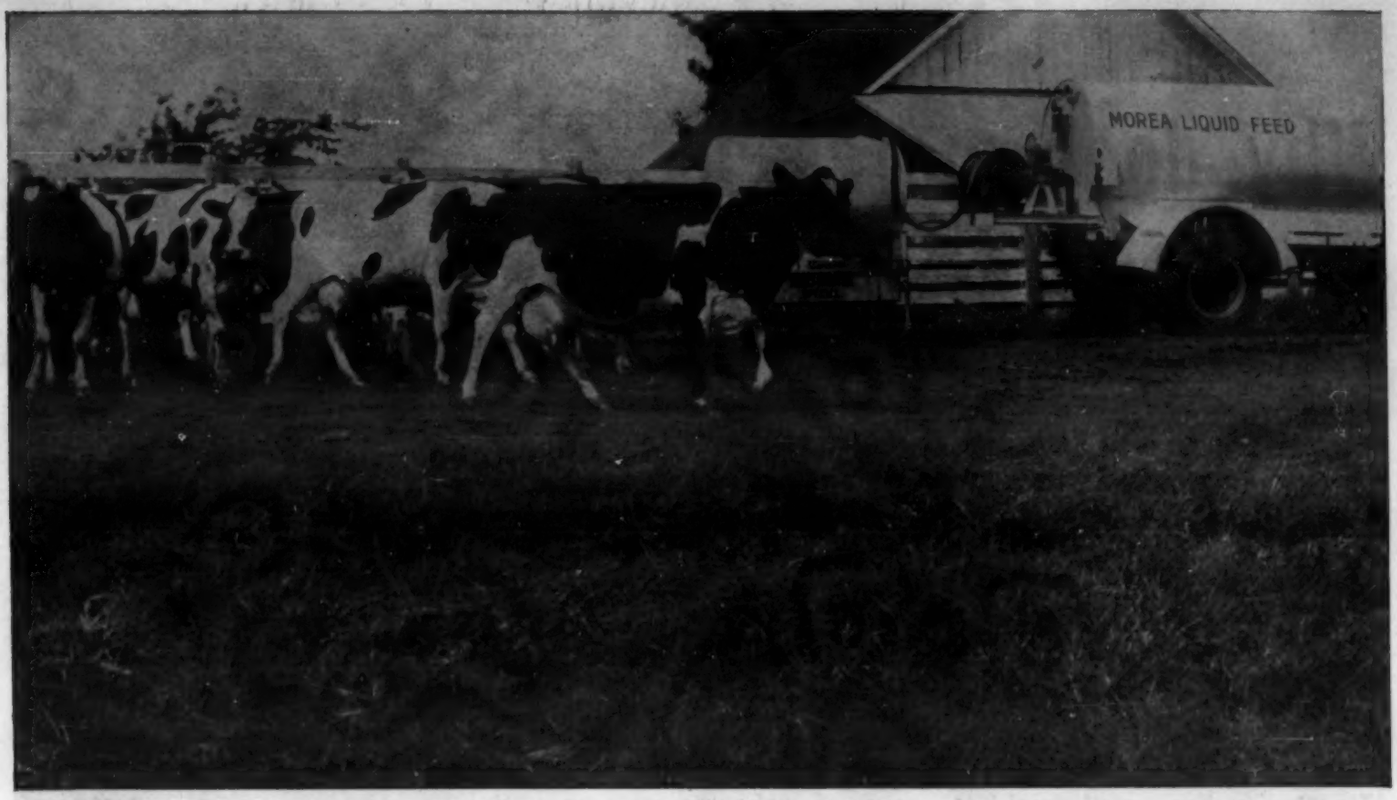
Excessively high temperature operation is much less common than too low temperature operation, but can be a cause of difficulty. At elevated temperatures, the problem is not one of contamination but rather one of oxidation. It is under these conditions that asphaltic and varnish-like materials are formed. These materials may completely plug piston oil-control rings and *(Turn to page 593)*

The author is an extension agricultural engineer at the University of Minnesota.

CHEMICAL CONTAMINANTS accumulating in crankcase oil can be removed only by draining at regular intervals and replacing old oil with new.

PHYSICAL IMPURITIES are removed from the crankcase oil by filter. Change filter element regularly. Color of oil indicates if filter is dirty.

BREATHER CAP should be serviced properly. Outlet tube must be open. Moisture and unburned fuel are driven out through ventilation system.



Here's how the **MOREA®** *liquid feed program makes* **extra profits in pasture season**

MOREA® liquid feed can help you maintain the early pasture flush in milk production throughout the season. Cows taking this free-choice supplement get the extra nutrients needed as pasture forage gets older, tougher and variable in quality. As forage declines in value, cows take more MOREA supplement as they need it. Even in dry seasons, MOREA liquid feed gives you extra milk. It works well with supplemental feeding of hay and silage as well as on straight pasture. Many dairymen using the MOREA feed program have saved 20 to 50 cents per hundredweight on the cost of producing milk in pasture season.

In Iowa, Henry Leonard always keeps a free-choice MOREA liquid feeder in the loafing area, and uses another in his pastures in season. His DHIA records show that his cows produce more milk on pasture when they receive MOREA feed. At the same time he feeds one-third less grain. His heifers, dry cows and calves on pasture also do well on the liquid supplement.

In Pennsylvania, Gerald Rebert keeps moving his MOREA liquid feeder to different pasture locations through the season. This helps to assure better and more even grazing of all the forage available. He reports increased milk and butterfat output at lower feed cost.

MOREA is a registered trade-mark of Feed Service Corporation.

With MOREA feed and a green-chop program, Franklin Burris of Maryland saves up to 54 cents feed cost per 100 pounds of milk from May to September. When cows have lots of high-protein forage, MOREA feed consumption is low. When forage gets older, cows take additional MOREA liquid supplement to maintain milk production and keep profits up. You too can increase your milk profits on the MOREA feed program.

THE SECRET OF NEW MOREA FEED IS ETHANOL

In recent experiment station tests, ethanol as a feed additive for ruminant animals increased rate of cellulose digestion and improved urea nitrogen utilization. Very small quantities of ethanol (ethyl alcohol) achieve this faster cellulose digestion by speeding up the bacterial growth cycle in the rumen.

New MOREA liquid feed is the only supplement that contains ethanol. In combination with other ingredients (urea, phosphoric acid, trace mineral elements and molasses) the ethanol in MOREA supplement helps the rumen micro-organisms digest feedstuffs faster and better. This helps produce more milk at low cost. MOREA liquid feed is easy to handle in handy storage feeder units and is not attractive to flies.

Start now to use MOREA liquid supplement for your dairy herd. Your MOREA mixer-distributor will guide you in starting your herd on the MOREA five-point feed program. If you don't know his name, ask us when you send in the coupon below.

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Feed Service Corporation
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U. S. Industrial Chemicals Co.
99 Park Ave., New York 16, N. Y.

Please send me full information on MOREA liquid supplement for dairy cows. (HD-5)

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Liver fluke disease . . .

. . . affects cattle, sheep, and other animals in the South and West. Control of this parasite is difficult but management and some drugs can be helpful.

by E. A. Woelffer, D.V.M.

A FLUKE is a small, flattened leaf-shaped worm parasite. The common liver fluke infests the livers of cattle, sheep, and other livestock.

Though the life history is complex, the eggs of the fluke, if they happen to reach water, develop into free-swimming embryos. They attack and enter the bodies of aquatic snails where they develop into a saclike stage. There, further changes take place and tadpole-shaped larvae are formed. They leave the snail, encyst themselves, and, if eaten by cattle or other stock, begin their burrowing through the animal's liver.

Fasciola hepatica, the common liver fluke, is distributed almost world-wide. In the United States the species has been reported in 22 states. Most heavily infected areas are in the Southeast and Southwest, the Rocky Mountain areas, and the Pacific Coast states.

In Florida, about 40 per cent of the counties have established infections. In some northern states there are only small areas where the disease presents a problem.

The parasite infects cattle, sheep, goats, pigs, horses, and some wild animals as well as man.

Fascioloides magna is a natural parasite of deer, elk, and moose. It is largely restricted to states bordering Canada.

Dicrocoelium dendriticum, the lancet fluke, lives in a relatively small area in central New York state. According to Dr. Baker of Cornell, this species has little importance nationally at present.

Fasciola gigantica does not exist in the contaminated areas of the United States mainland, but does occur in Hawaii where it is considered the most important parasitic disease in the lowland coastal area.

Produces scars . . .

Larvae (not fully developed) flukes cause mechanical destruction of liver tissue. The extent of damage is largely dependent upon the length and severity of infection. Where it is severe much fibrous tissue develops. The capsule of the liver thickens and becomes roughened. Adhesions may form between it and other organs.

Flukes gather in bile ducts and produce a chronic inflammation.

In acute lethal attacks the liver may be 1½ times its normal size. Its appearance and color has been reported to resemble a mass of uncooked fatless hamburger.

In mild infestations or chronic infections, symptoms often are absent. Symptoms in cattle usually are seen only in the heavily-infected areas. Heavily-infected individuals show a chronic emaciation (animals appear starved) and unthriftiness. Milk production drops.

Other symptoms which sometimes occur are diarrhea, constipation, and a swelling at the base of the throat. There may be anemia, general weakness, and emaciation.

In extreme cases the animals may show a general edema (swelling) and excessive fluids in the abdominal and thoracic cavities. Often the heart sac is filled with fluid.

Control measures involve anthelmintics (drugs to dispel parasites), isolation of animals from infected areas, and pasture drainage to destroy snails which are necessary in the life cycle of liver flukes.

In flat areas where drainage is not feasible, it may be impossible to set up an effective control procedure. Copper sulphate is most widely used as a soil treatment, but it has very definite limitations.

In the animal, carbon tetrachloride and hexachloroethane are efficient anthelmintics. The former is quite toxic and the latter difficult to administer. These compounds will not destroy young flukes localized in the liver, or adult flukes in badly-damaged liver areas. Because these drugs are ineffective on immature flukes, repeat treatments are necessary.

In the Gulf states, medication at the end of the summer destroys the adult flukes and lowers the number of eggs being passed on pastures. Medication in the spring destroys flukes acquired early in the fall from infected snails.

In northern regions where cattle and sheep are not subject to infection during the winter, medication is given just prior to turning them back onto infected areas. Medication also may be recommended during the period of exposure.

In all cases it is wise to treat animals after they have been moved from infected to noninfected areas or feed lots. In areas where rainfall is high, medication usually is used every three or four months. Death losses have been noted following medication of sheep grazing on green oats and wheat.

Control measures in farm animals are complicated in some areas where infected wild animals, especially rabbits and deer, are present.

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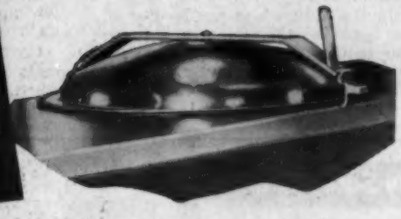

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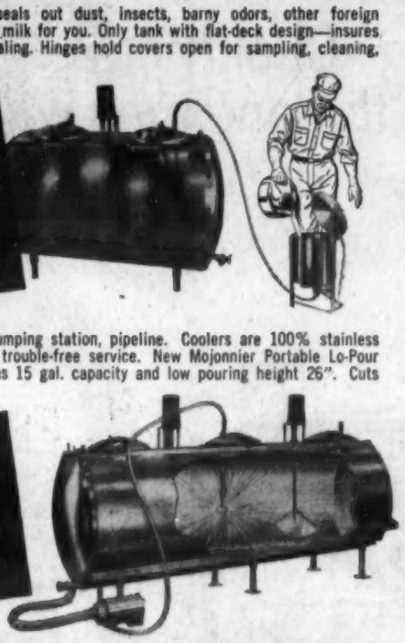
SPRAY-O-MATIC cleans clean!



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by Robert W. Duell

KENTUCKY bluegrass pastures are often overlooked when thinking of better pasture yields, except that they be renovated and sown to so-called "more productive" species. These taller-growing species often last only a few years, and under continued pasturing the land reverts to bluegrass.

Farmers and agronomists alike know that bluegrass is admirably adapted to the pasture environment. Vigorous sods develop and persist even under hard, continuous grazing that would soon eliminate other pasture grasses. There is ample evidence, also, that bluegrass survives with little or no fertilization as long as the land isn't excessively acid.

Browned bluegrass hillside pastures during midsummer seem to support the prevailing opinion that this species is extremely drought susceptible and unworthy of being fertilized.

Comparisons made . . .

We made a field comparison of six commonly-used pasture grasses (alta fescue, timothy, Kentucky bluegrass, orchard grass, reed canary grass, and brome grass) under three levels of spring-applied 10-10-10. It was thought that the accusations commonly brought against Kentucky bluegrass would surely be confirmed. We expected to find that this volunteer pasture grass was lower in productivity, particularly during midseason, and would give less response to fertilization than other taller-growing species.

The experiment was conducted in such a way that it might compare with on-the-farm pasturing except that mowing machines were used to simulate grazing. That is, harvests were made whenever the growth was such that a farmer would begin rotational grazing.

The fertilizer was broadcast as the farmer might do it. Most pure grass pastures are fortunate if they get any fertilizer, and what they do get usually is applied in the spring as growth begins. The rates of 10-10-10 applied were 200, 600, and 1,000 pounds per acre. This compares with what the farmer would consider low, medium, and high rates of fertilization.

The three years' data indicate that all grasses generally responded with increased yields as the rate of fertilizer increased.

The best response to fertilization occurred in the first cutting, somewhat less in the second, and essentially no carry-over of spring fertilization to the third and fourth cuttings. Even the 1,000 pounds per acre of 10-10-10 could not be expected to last half the season.

Breaking down the data, we found that all the grasses did not respond to fertilization to the same

The author is an assistant research specialist in farm crops at Rutgers University, New Jersey.

		Pounds oven dry matter per acre	
		Kentucky bluegrass	Orchard grass
200 pounds 10-10-10 per acre per year	May	701	934
	June	769	684
	August	485	380
	September	550	467
	Total	2,514	2,464
600 pounds 10-10-10 per acre per year	May	1,264	1,539
	June	1,072	948
	August	476	353
	September	531	412
	Total	3,343	3,252
1,000 pounds 10-10-10 per acre per year	May	1,731	2,102
	June	1,406	1,195
	August	550	449
	September	490	472
	Total	4,177	4,218

Kentucky bluegrass outyielded orchard grass in all cuttings except the first cutting in the spring, and at each of the three rates of 10-10-10 applied.

extent. Under this simulated pasture management, only orchard grass and Kentucky bluegrass were more responsive to the highest increment of fertilizer than to the lower increment. We might expect this from orchard grass which is known as a superior pasture grass, but might expect grasses other than Kentucky bluegrass to be in this category.

Another finding contrary to common views was that Kentucky bluegrass outyielded orchard grass in the production of aftermath. It may be seen in the table that while orchard grass outyielded Kentucky bluegrass in the first cutting, Kentucky bluegrass was superior thereafter at all rates of fertilization.

The additional aftermath produced by Kentucky bluegrass is valuable because of its timeliness. The higher yield of orchard grass in the first cutting comes at a time when the problem is more with handling excesses rather than with facing deficits. Thus, orchard grass, managed as pasture, would contribute to the problem, while it was shown in this experiment that fertilized Kentucky bluegrass contributes to the solution of the problem of uniform pasture production more than we realize.

Some lack palatability . . .

The yields of other grasses could be cited for comparison, but suffice it to say that alta fescue was consistently highest in yield. Timothy also ranked high. However, these grasses have serious limitations for use as pasture species. Palatability and digestibility of alta fescue are low and timothy is productive only in the spring and quite dormant thereafter.

Reed canary grass was consistently lower yielding than orchard grass; brome grass was lowest.

By chemical analyses of the harvested forage, it was found that the content of fertilizer constituents followed the same pattern as did the yields. Increasing the rate of fertilizer applied increased the per cent composition of nitrogen, phosphorus, and potassium in the grass. This effect was most marked in the first cutting, less in the second, and little in the third and fourth. This would indicate that yields were limited by a depletion of fertility as well as possible drought effects.

The 10-10-10 applied provided somewhat less nitrogen than was removed each year, and a great deal less potassium, particularly the first two years. Each year the plant content of potassium decreased. The soil was being severely mined of its available potassium. This is significant to note because many fertilizer recommendations for grass stipulate that considerably less potassium than nitrogen be applied. The 10-10-10 applied did provide more phosphorus than was removed. The maximum removed was 30 pounds P_2O_5 per acre per year.

Diet needs vary . . .

The various grasses held definite positions with regard to their content of fertilizer constituents each year. Orchard grass was consistently highest in content of phosphorus and potassium, while Kentucky bluegrass was always lowest in potassium. These apparently inherent differences in content of fertilizer constituents might conceivably be important in determining their fertilizer requirements and their competitiveness in associations, particularly with legumes.

By way of reconciling the differences between views that are widely accepted concerning the relative merits of Kentucky bluegrass and the data put forth in this article, I think our experiences with the appearance of Kentucky bluegrass have been misleading. It is an altogether too common sight to see brown unproductive hillside pastures of Kentucky bluegrass, and we remember this in comparison with lush, green fields of a Ladino clover and orchard grass mixture. I believe it is true that Kentucky bluegrass browns up more than orchard grass during a drought. However, under such conditions, orchard grass isn't productive either. Generally, the orchard grass is sown on better soil. Hence, visual comparisons with Kentucky bluegrass on a hillside are not valid.

One might say that in addition to visual comparisons, there are certain yield data indicating the advantage of orchard grass and other species over Kentucky bluegrass. However, these studies generally were conducted so that orchard grass was allowed to attain the hay stage of development. Kentucky bluegrass should not be expected to compare favorably on such a basis. Also, data are sometimes presented to show the advantage of renovated pastures over the untreated Kentucky bluegrass pastures.

It is unfair, I believe, to attribute all of the yield advantage to the inherent superiority of the newly-established species over Kentucky bluegrass. Certainly some of the credit should be given to the stimulus provided by the addition of fertilizer and the establishment of superior legumes which are part of the renovation.

While it is likely that under a system of combined hay and pasture management the tall-growing species should be more productive than Kentucky bluegrass, it appears that the potential of the millions of acres of Kentucky bluegrass pasture in our country has been underestimated. They really are worthy of a higher plane of management. Through the use of more fertilizer and the maintenance of better legume associates, these Kentucky bluegrass pastures, already proven perennial, may be raised to a higher level of production than many realize.

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EDITORIAL COMMENT

TIMING IS THE KEY TO PROFITABLE HAYING

IN THE business world, fortunes have been made and lost because of good or poor timing. So it is, too, when it comes to making hay. Throughout the major dairy areas of the North Central and Northeastern states haying equipment should be ready to go. Mid-June and late June are far too late to begin putting up this season's supply of forage.

It was just five years ago that we presented one of the most significant articles ever published in our columns. Readers may recall the report from Cornell University comparing protein and TDN losses which are suffered when we delay the haying season.

June 1 cuttings were compared with cuttings June 15 and July 1. In the two weeks from June 1 to June 15 approximately 25 per cent of the protein and 10 per cent of the total digestible nutrients were lost. By July 1 this percentage loss had increased to 50 per cent of the protein and 20 per cent of the total digestible nutrients.

We believe everyone knows that early-cut is better than late-cut hay, but so many farmers foul up in their timing. For years we have been told that alfalfa hay should be cut in the one-tenth bloom stage. The trouble is that too many farmers start cutting at this time and don't finish their haying until the hay is in full blossom, when it is woody, high in lignin, and low in protein.

In our opinion, we should start cutting when alfalfa is in the bud or "shot" stage so that we can have the entire first cutting up by the one-tenth bloom stage. The "shot" stage might be defined as that when the alfalfa bud feels like it is holding a "shot" or "BB."

If anyone needs further evidence of the importance of getting up quality hay, turn to page 570 and see how much grain has to be fed to offset the feeding of mature poor hay. Even by feeding three times as much grain it was not possible to get production up to that provided by the kind of hay all of us should have in the barn next winter.

HOW MUCH LAND?

OF THE 39 billion acres which compose the earth's land surface only 2.5 to 3 billion acres are now being cultivated. According to a recent issue of Foreign Agriculture, about a fourth of our cultivated land is in the United States, U.S.S.R., India, and China.

The question is raised as to how much new cropland can be added to what already exists. The article points out that no world inventory of potential cropland has ever been made. But geographers and agricultural scientists have speculated in recent years on the possible limits of agriculture. Most of them agree the absolute bounds have not been reached, though the best lands are used.

Agricultural technology may make possible the use of large areas of the Tropics. Irrigation may be extended to the deserts. The dry, cold frontiers may be pushed back. So, while any answer to the available land question is debatable, the estimates now range from a low of 1 billion acres to a high of nearly 8 billion additional acres.

We cite these interesting observations, not because they have an influence on our day-to-day farming operations, but to serve to refute the urban forecasters of "doom-by-starvation." It has been their favorite pastime ever since the writings of Robert Malthus, some 150 years ago, to paint a dreary picture of our future food prospects.

In recent years the starvation theory has been the favorite refuge for these commentators on agricultural policy who could not figure out any means for solving the farm surplus problem and improving the farmer's economic lot. They threw up a smoke screen of fear to becloud the real economic issue.

MILKING MACHINE DOCTORS

IN A survey of New York dairy farms, 84 per cent were found to have milking equipment that required repairs and better maintenance. This is a shocking situation when we consider how important the milking machine is to udder health and the prevention of mastitis. Before anyone points a finger at New York, be assured that the same situation undoubtedly exists in every dairy region of the U. S.

Even in New Zealand a survey revealed that 79 per cent of the farms in that intensive dairy country had malfunctioning milking machine equipment.

In California a survey revealed that 50 per cent of all the piston-type dual pulsators were inoperative or malfunctioning.

It was just a year ago that we completed the presentation of a series of four articles, "Mastitis can be licked now!" The work of the five-man California mastitis team, headed by Dr. O. W. Schalm, was reported in considerable detail.

We believe there is a rapid awakening of dairy farmers to the importance of not only good milking practice, but milking equipment in perfect operating condition as well.

Even if skilled techniques are employed we can make little headway in efficient milking and mastitis prevention if we have to work with equipment which stymies or negates every good practice we follow at milking time.

Unfortunately, in years past, too few dealers and servicemen have had the training or ability to do the type of milking machine analysis that is required. It is heartening, therefore, to learn that at least two, and undoubtedly more, of the major milking machine manufacturers are planning intensive schooling of key personnel to do this technical work.

It is a vital function to successful dairying, requiring examination, diagnosis, and a prescription for remedial treatment. In short, we need well-qualified milking machine doctors. And, according to the New York, California, and New Zealand surveys, we need them now!

75 years ago...

Heaven be praised that the moral and the physical law is such that a brutal owner of a cow cannot shame her by uncorking a stream of profanity and abuse without taking cash right out of his pocket. That is one kind of retributive justice from which there is no escape.

W. A. Hoard

THE ILLUSION OF THE 50'S

HOW a story once told bears repeating! Early in the 1950's it was observed that non-price-supported commodities oftentimes were doing as well, or better, than those which were under price supports. Quick logic indicated that no commodity should be supported and our problems would be over.

We had thought that most well-informed people had seen through the fallacy of that reasoning but a U.S. Senator recently repeated it before the American National Cattlemen's Association. He said:

" . . let me point out that, generally speaking, producers of agricultural products — under the price support and acreage limitation program — are finding rough sledding. While producers outside the program—operating on market place values in response to the law of supply and demand — are faring much better than their subsidized brothers.

" . . . Commonsense tells us the only way to rescue the farmer and to re-establish his dignity in our economy is to get farm products back on the open market."

If the senator had told the whole truth, he would have told the cattlemen that under his recommendations beef cattle prices would fall to a projected $11.51 per hundredweight by 1963. This is the projection of qualified economists from the great livestock state of Iowa.

Even U.S. Department of Agriculture agrees there would be a sharp price decline. They projected, however, that price would not fall quite so far, only to $15 in 1965 but, in their projections, they assume that the Senator and his colleagues would provide a soil conservation reserve in the Soil Bank totaling 30 million acres. At the present time it appears doubtful that Congress will extend the Soil Bank. Thus, the Iowa projection of $11.51 would be the more probable price level for beef.

Nothing so obstinately stands in the way of all sorts of progress as pride of opinion; while nothing is so foolish and baseless.

—J. G. Holland

Long-time readers of this page know we have had little sympathy for the type of price support program under which we now farm. But it is reckless and irresponsible for farm leaders and congressmen to advocate throwing out the program without something more workable and reasonable to replace it.

OIL IMPORT QUOTAS CONTINUED

IT HAS been recommended that import quotas on oil should be continued "for the foreseeable future" and quotas on lead and zinc should be continued "at least beyond 1960." Interior Secretary Seaton told a press conference recently that the mandatory quotas on shipments of the three minerals from abroad are fulfilling their purpose of helping domestic producers.

Why is it that metropolitan newspapers and magazines never get around to telling their readers how American business and industry are protected by artificial restraints, favors, and subsidies which benefit American industry and labor?

Questions from Our Readers

Moisture causes peeling

In one of your recent issues you had an article on penta for steps that do not hold the paint. There are several places on the siding of our house where the paint is peeling. Do you think this same treatment might be satisfactory for these spots?

Michigan R.M.

The article to which you refer had reference to a preservative treatment for wooden steps before painting, in order to increase their resistance to decay.

The use of penta on the areas of your house where the paint is peeling would have no bearing on this problem. Paint peeling is usually the result of internal moisture and generally cannot be controlled, unless the movement of the moisture is controlled.

—D. W. BATES
University of Minnesota

Silo treatment not poisonous

Would linseed and turpentine sprayed on silo walls be poisonous to dairy cattle? If not, how much linseed and turpentine would it take to cover a silo 14 by 35 feet?

Minnesota E.G.

Turpentine or raw linseed oil used on the inside of a silo will not poison livestock.

If the silo is new, or has not had an internal protective coating for some time, two treatments are recommended.

For the first coat, a mixture of about two parts of raw linseed oil and one part of mineral thinner or turpentine should be used. Further applications should be of undiluted raw linseed oil.

A gallon of the coating material under consideration will cover about 400 square feet as you intend to apply it. For 1 coat, 4 gallons will be required. A suggested mixture would be 11 quarts of raw linseed oil and 5 quarts of turpentine or mineral thinner for the first coat. For additional applications, 4 gallons of raw linseed oil would be necessary.

—D. W. BATES
University of Minnesota

Ureabor

Where can we get ureabor? What is the price and is it dangerous to livestock in pasture?

Arkansas E.W.H.

Ureabor is a dry, gray, granular soil sterilant material which is applied in dry form. Application should be made the last thing in the fall before it permanently freezes up, or the first thing in the spring as soon as the frost is out of the ground.

To apply ureabor, use a small cyclone grass seeder or a dry fertilizer spreader. Application results in complete soil sterility. Stay 40 to 50 feet away from all desirable shrubs and trees because of their roots. Even at quite some distance they can pick up enough material to injure them.

Generally, 1 pound per 100 square feet is sufficient to give sterility for about one year.

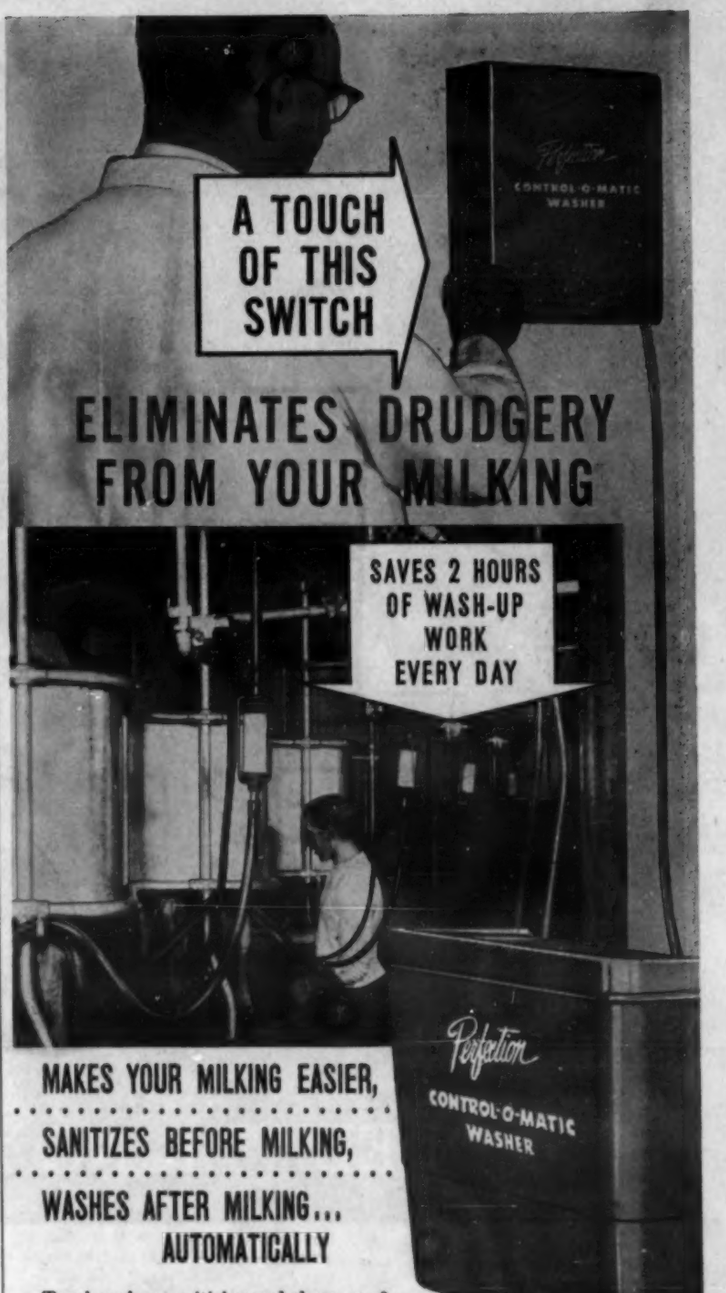
We have used ureabor in pastures frequented by livestock without ill effects. If the material is applied evenly on dry vegetation, it falls directly to the ground and the first rain dissolves and carries it into the soil beyond the reach of livestock. Whenever any chemicals of any kind are used in pastures, however, it is always a good idea to have minerals and salt accessible to the animals in sufficient quantity to prevent any craving for salt, minerals, or other foreign tasting materials. This is just good, sound precaution.

The company that manufactures this chemical has dealers throughout the country so we are sure you can find a distributor somewhere in your area.

—E. P. SYLWESTER
Iowa State University

ED . . . and EMMA

". . . No, you can't have one to drive back and forth from the barn to the house!"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Write today for complete information about this latest, work-saving Perfection milking equipment.

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Get on the road to more milk and bigger milkchecks... make way for a De Laval Combine Milker. The cost?— as little as 3¢ a cow per milking!

Combine Milking lets you add more cows without more labor... or cut labor, if you want to.

And only De Laval gives you fast, clean, gentle milking... plus "Turbulent Action" Automatic Washing...

Pipeline milking is an investment you'll make once in your lifetime. Doesn't it make sense, then, to be sure that the pipeline you buy is the one that will do the best job for you?

That's why we say *investigate before you invest!* And the two things you should investigate most closely are the way it milks and washes. A De Laval Combine Milker does everything you expect a pipeline milker to do, *and* it gives you the *extra benefits* of fast, clean and gentle milking... plus more sanitary, more economical automatic washing *at no extra cost.*

Feature for feature, *compare* the De Laval with any other pipeline milker. You'll see why we're the only manufacturer who urges you to *investigate before you invest.*

Fast, Clean, Gentle Milking

Other pipeline milkers use large-bore liners that increase impact on cows' teats, cause rough milking that can injure udders and cut production. Our exclusive "Full-Flo" teat cups use narrow-bore liners that fit teats like a glove, get milk out with a gentle, massaging action. Result — more milk, higher quality milk, healthier udders.

The secret of De Laval's fast and clean milking is right here, in our Magnetic Pulsator. It's the *only* pulsator that assures *absolutely uniform milking* no matter who milks. This one has been proved best by billions of milkings.

Remarkable Automatic Washing

"Turbulent Action" Vacuum washing is best. This test shows why. Bottle at left is *half-filled* with water. See the turbulence when it's shaken? That's how De Laval *vacuum* works. It *pulls* water through lines at 35 mph to scour

away fat and milk. Other bottle is *filled.* When shaken, no turbulence! That's how *pressure* systems wash. They fill lines then *push* water through at only 4 mph without turbulence. And without turbulence you can't expect sanitary lines or low bacteria counts.

What's more, De Laval uses 60% less water and detergent, less electricity. With pressure you'd need 78,840 gallons of water a year for a 50-cow herd... only 32,850 gallons with vacuum. Uses 319 lbs. *less* detergent, too.

Know how to calibrate . . .

(Continued from page 567)

TABLE III — Boomless Sprayer Calibration

Gallons in 40 rods	Swath width in feet									
	20′	25′	30′	35′	40′	45′	50′	55′	60′	65′	70′
	Gallons per acre										
2	6.6	5.3	4.4	3.8	3.3	2.9	2.6	2.4	2.2	2.0	1.9
2½	8.3	6.6	5.5	4.7	4.1	3.7	3.3	3.0	2.7	2.5	2.3
3	9.9	7.9	6.6	5.7	4.9	4.4	3.9	3.6	3.3	3.0	2.8
3½	10.8	9.2	7.7	6.6	5.8	5.1	4.6	4.2	3.9	3.5	3.3
4	13.2	10.6	8.8	7.6	6.6	5.9	5.3	4.8	4.4	4.0	3.8
4½	14.8	10.9	9.9	8.5	7.4	6.6	5.9	5.4	4.9	4.5	4.2
5	16.5	13.2	11.1	9.5	8.3	7.3	6.6	6.0	5.5	5.1	4.7
5½	18.2	14.6	12.2	10.4	9.1	8.1	7.3	6.6	6.0	5.6	5.2
6	19.8	15.8	13.2	11.4	9.9	8.8	7.9	7.2	6.6	6.1	5.7
[illegible]	21.4	17.2	14.3	12.3	[illegible]	9.6	8.6	7.8	7.1	6.6	6.1
7	23.1	18.5	15.4	13.2	11.6	10.3	9.3	8.4	7.7	7.1	6.6
7½	24.7	19.8	16.5	14.2	12.4	11.0	9.9	9.0	8.3	7.6	7.1
8	26.4	21.2	17.6	15.1	13.2	11.8	10.6	9.6	8.8	8.1	7.5
8½	28.1	22.5	18.7	16.1	14.1	12.5	11.2	10.2	9.4	8.6	8.0
9	29.6	23.8	19.8	17.0	14.9	13.2	11.9	10.8	9.9	9.1	8.5
9½	31.4	25.1	20.8	17.9	15.7	14.0	12.6	11.4	10.4	9.6	9.0
10	33.0	26.4	22.0	18.9	16.5	14.7	13.2	12.0	11.0	10.1	9.4
10½	34.6	27.8	23.2	19.8	17.3	15.4	13.9	12.6	11.5	10.7	9.9
11	36.2	29.0	24.2	20.8	18.2	16.2	14.6	13.2	12.1	11.2	10.4
11½	38.0	30.5	25.4	21.7	19.0	16.9	15.2	13.8	12.6	11.7	10.8
12	39.5	31.7	26.5	22.7	19.8	17.6	15.8	14.4	13.2	12.2	11.3

GALLONS DISCHARGED in 40 rods can be determined by finding time it takes to drive 40 rods, then running sprayer in stationary position and catching spray for time equal to that determined while driving 40 rods.

by the desired row width. For example, the table shows a rate of 5 gallons per acre with 40-inch rows; then the rate with 36-inch rows would be $\frac{5 \times 40}{36} = 5.55$ gallons per acre.

To correct the acres-per-50-gallons column, multiply the figure in this table by the new row width and divide by 40. If the table indicates 10 acres per 50 gallons with 40-inch rows then $\frac{10 \times 36}{40} = 9$ acres per 50 gallons with 36-inch rows.

No correction is needed for the amount of pesticide to add to 50 gallons of spray. The amounts remain the same for all row widths.

A special calibration table has been prepared for boomless sprayers. Table III is the solution at certain points of the general calibration formula referred to earlier.

It is necessary to determine two things before this chart is used:

1. The gallons discharged in the time equivalent to driving 40 rods.
2. The swath width.

To determine the gallons discharged in 40 rods, first determine the time that it takes to drive 40 rods and then run the sprayer in a stationary position and catch the spray for the time equal to that determined while driving 40 rods. The engine speed and pressure setting when testing should be the same as when spraying.

Usually the spray can be caught in a can, such as a milk can, by holding the nozzle assembly in the can, opening the valve, spraying into can for time determined above, then closing the valve.

The swath width varies with speed, pressure, and wind.

When swath width and gallons discharged in 40 rods are known, the gallons per acre can be read directly from the table. For example, with 6½ gallons caught and 40-inch swath, the rate is 10.7 gallons per acre.

The amount of chemical to put into 50 gallons of spray can then be read from the table for broadcast spraying with boom sprayer (Table I) by going down the second column to the gallons per acre, closest to that determined above, and then to the appropriate column for the chemical used and the amount of the chemical desired per acre. For example, the amounts of the chemicals in the line with 10.6 gallons per acre would be used. If 2,4-D with 3 pounds acid equivalent per gallon is to be applied at ¼ pound per acre then 3.1 pints would be used with 50 gallons of spray.

THE END

LOOK AT ALL THE EXTRAS YOU GET IN A DELAVAL COMBINE MILKER

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75 years ago...

Ten acres of soiling crop will give the same results as sixty acres of pasture. And during the hot, dry months of August and September, when the pastures are burned up, will prove vastly more satisfactory. One man for an hour during the early morning will cut enough for two meals, and the feeding to the animals is only a very short chore.

Hiram Smith, who keeps nearly 100 cows on 200 acres of land, depends very largely on soiling. He sows winter rye for the early feed. When the rye gets too woody he then changes to clover, then follows millet, succeeded by fodder corn and the second cutting of clover. He is a man who figures cost very closely and claims that for making a pound of butter ordinary pasture is the most costly of any kinds of farm food.

W. D. Hoard

Forage testing is paying off . . .

(Continued from page 563)

expected freshening. This level of feeding is continued for 4 days after calving. Then it is increased to 17 pounds daily for all cows by the ninth day after freshening. A fresh-cow feeding schedule is custom-made to suit the needs of each individual herd.

Less udder trouble . . .

Putting his fresh-cow feeding schedule into practice actually reduced trouble from congested udders and mastitis for William Ringler in Somerset County. Less udder trouble also has been reported by Kenneth Landes and countless others, who have been feeding their cows much heavier at calving time.

We are confident that the fresh-cow feeding schedules will help improve production and health to a greater extent than any other phase of the program.

The Ringler herd of Holstein and Brown Swiss cows averaged 12,107 pounds of 4.0 per cent milk last year. Since using the forage testing service, production has increased considerably, despite a change in grain to milk ratio of 1:2½ to 1:4½. A 14 per cent mix costing $2.94 per hundredweight is now fed rather than the 16 per cent feed previously used. These changes were made possible when forage intake was increased at our suggestion.

Boost from alfalfa . . .

Whenever the hay-crop forage fed to milk cows is only fair or poor in quality, we often recommend the feeding of at least 2 pounds per cow daily of good alfalfa hay, pellets, or meal to improve feed utilization. In many cases, cows will respond markedly to this feeding, even when fed high-quality annual forages.

Ronald Kerr of Crawford County obtained a "tremendous" increase in production and noted an improvement in appetite when he fed 2 pounds of alfalfa meal on his silage. Kerr's feeding program also suggested a 20 per cent mix rather than the 12 per cent grain mix formerly used. While he decided to go no higher than a 17 per cent mix, he is well-satisfied with the results.

Fred Wiant, also of Crawford County, obtained an even greater kick from feeding only 1 pound of alfalfa meal per head daily. This was the only change made in feeding program. Wiant's cows soon jumped two cans of milk. This represents an increase in production of about 4½ pounds of milk per cow daily, a gain of 16 per cent.

Changing hay paid . . .

Thomas Lutz of Luzerne County was quite discouraged when he received his feeding program this fall. It required an 18 per cent grain mix, due to the low quality of hay fed. He then decided to sample two lots of hay made in 1958. Both turned out to be good quality and much higher in protein content.

The feeding program developed for use with this year-old hay suggested that a 13 per cent grain mix be fed at a somewhat reduced rate. The difference in the cost of one batch of feed paid the $10 in forage testing fees. In addition, production in this herd of 22 cows increased about 1½ cans per day.

All members of the Frank Black family in Somerset County realize the benefits which they are reaping from forage testing. Milk production has increased by 10 per cent; while the grain mix has been reduced from 16 per cent to 13 per cent crude protein. The current grain mixture consisting of purchased grains and supplements is $2.96 a hundredweight.

Mr. Black and his family are well-satisfied with "this positive feeding-for-production program." He writes, "Forage testing has saved us money and increased production. What more can you ask?"

Benefits three ways . . .

A reduction in grain feeding, a cheaper grain mixture, and improved production have combined to increase returns by $14.88 per cow monthly for Gerald Mattocks of Wyoming County. Milk production has jumped almost 7 pounds per cow daily and butterfat test has increased from 3.6 to 3.7 per cent. Mr. Mattocks now is feeding 500 pounds less grain each week to his cattle.

Oats is the only home-grown grain available on this farm. Before receiving his feeding program, a mixture of oats, by-product ingredients, and protein supplements was used. This mix cost $3.55 per hundredweight.

$28.80 per ton difference . . .

The 14 per cent mix now fed contains purchased ear corn, oats, 50 per cent supplement (with urea), trace mineralized salt, and dicalcium phosphate. This new mixture costs $2.11 per hundredweight, with oats at $54 per ton. The difference in costs between the two feed mixtures comes to $28.80 per ton.

Mr. Mattocks formerly fed at a 1:3 grain to milk ratio. Now cows producing 29 pounds or over are fed at a rate of 1:4; those producing less than 29 pounds of milk daily are fed 1 pound of grain for each 6 pounds of milk. Both the mixed hay and corn silage being fed rated good in quality. The amount of corn silage fed has been increased 12 pounds, and hay intake has been raised 3 pounds per cow daily.

An investment of $10 for two forage testing cartons enabled Mr. Mattocks to obtain these benefits. The additional returns from one cow for one month more than paid his forage testing costs. Admittedly, the results on this farm are exceptionally good. However, reports from other farmers and data obtained from our demonstration farms indicate that extra returns of $40-$80 per cow yearly often can be realized from increased production per cow and/or savings in feed costs.

Up-grading forage . . .

While many of the immediate benefits from forage testing arise from feed programming, we are certain that the long-range benefits of the program will be derived from improved forage quality. On several of our demonstration farms the average TDN (total digestible nutrients) content of the forage fed has been increased by as much as 6 per cent on a dry matter basis from one year to the next.

A similar improvement occurred on the Corselius farm mentioned earlier. These changes resulted from the farmers' study of their forage-testing reports.

We feel that forage testing will

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accomplish for forage making fully as much as soil testing has done for fertilization practices. In addition, our extension and research programs have been strengthened by findings from forage testing.

Mechanics of program . . .

Farmers obtain forage-testing cartons and necessary forms from their county agricultural extension offices, or in some areas, at feed and fertilizer outlets. The Penn State forage samplers, which are used to sample hay, may be purchased or loaned through the county offices, and other outlets. In some counties, DHIA supervisors also have necessary supplies.

Each sample carton sells for $5, payable as they are procured. For each sample submitted, the farmer receives a forage testing report listing the crude protein, calculated digestible protein, crude fiber, and calculated TDN contents on both a dry matter and "as fed" basis. Moisture content is given, and a quality grade assigned.

If requested on specially provided forms, feeding programs are developed at no additional charge for dairy cattle and other livestock. Approximately 75 per cent of the farmers request feeding programs. We firmly believe that feed programming should be an integral part of a forage-testing service. Forage-testing reports alone may not be enough.

Future . . .

We know that improvements in our present program will be forthcoming. New research, ideas from other people, response in the field, and other factors will contribute to an improved program.

However, we are confident that even in its infancy forage testing, as now conducted in Pennsylvania, can help greatly thousands of farmers.

Not everyone will benefit to the extent of the dairymen mentioned here. Only a relatively small fraction of our farmers will probably use the service. In addition only 50 per cent of those receiving feeding programs will put the suggestions to work for them. Nevertheless the satisfied farmers will help sell the service to their neighbors.

In many respects each satisfied user of the program serves as a demonstration of what can be accomplished with a more scientific approach to producing forage and feeding farm animals. **THE END**

75 years ago...

Horns with a joint! So we are informed, and they are to be found on a cow in Baldwin (St. Croix County) Wis. Mrs. M. B. Searles writes of such a cow, the horns of which "hang down, and swing loosely," as the animal moves. Her owner says, "It is natural." It is further claimed there are such cattle in Norway.

"What have we to say about it?" Nothing. We have lots of stuff easier to believe to take up our time. But we would like those fellows who believe the Almighty put horns on cows for the express purpose of providing them with weapons of defense to tell who put on the horn with a joint —and what for?

W. A. Hoard

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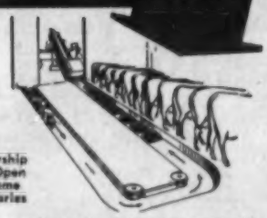

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Cattle just naturally prefer the sweeter aroma and flavor of STA-FRESH treated grass silage. In free choice feeding tests, cattle consumed an average of 63 pounds of STA-FRESH treated silage as compared to only 18 pounds of untreated silage.

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STA-FRESH treated silage is extra high in carotene (Vitamin A), sugar, digestible dry matter and total digestible nutrients. It helps keep milk production high and gives you good, rich milk, even in winter. It makes a good, low-cost feed that beef cattle like and gain weight on. You also get these other advantages:

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STA-FRESH keeps silage fresh and green for months after you put it up . . . works successfully on a variety of grass and legume forage crops . . . lets you cut and ensile crops the moment they mature, *regardless of weather conditions.*

No silage stink!

STA-FRESH keeps silage sweet smelling—ends the silage stink that clings to your clothes, contaminates your barn and may even carry into milk.

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STA-FRESH is General Chemical's special silage-grade sodium meta-bisulfite. The new crystal form is especially free-flowing and easy to apply at the blower or field chopper. Works well in any type silo—upright, stack, trench or bunker. *An 80 lb. bag treats 10 tons of grass silage!*

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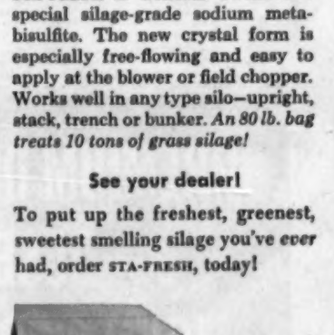
To put up the freshest, greenest, sweetest smelling silage you've *ever* had, order STA-FRESH, today!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FEEDING

Consider feeding cows in dry lot

It is a profitable way of keeping more cows than pasture will carry. Here are the advantages of year-around dry-lot feeding.

by J. K. Loosli

IN THE previous issue I cited recent research which showed it was possible to obtain as much milk per acre by pasturing as by cutting and feeding the fresh forage (soilage) in dry lot, provided the cows consumed all the forage. This is a difficult thing to achieve.

The probable reason that most of the published experiments have shown greater milk yields per acre with soilage feeding is because less forage was wasted. I believe this would be true on most dairy farms because of the difficulty of achieving ideal pasture management.

Most dairymen have a great excess of pasture the first month or two in the spring and an equally great shortage in midsummer and early fall. Good evidence for this is the fact that in New York State spring freshening cows produce an average of 50 pounds less fat per lactation than fall-freshening cows.

At a 3.6 per cent test this is equal to 1,400 pounds less milk in a 10-month lactation. The difference might be even greater in the southern states where hot weather is a problem for a longer time. Without question a shortage of feed is the main cause of this drop.

These facts are surprising when one considers the increase in milk production as cows are first turned to pasture in the spring. Too many dairymen allow the surplus forage to get mature so its palatability and digestibility are both lowered. If the cows are able to satisfy their hunger they seldom complain. Lowered milk production is the only evidence that feed consumption is inadequate.

When feed is scarce, such as on many permanent or partially-wooded pastures, cows will spend much of their time trying to gather enough feed. The extra work of prolonged grazing robs energy that might be used for making milk. Of course, good dairymen make

"Getting enough to eat?"

where only the best will do

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sure their cows are amply fed, but underfeeding is still common.

When cows are fed in dry lot one can see at a glance if they are out of feed.

With dry lot feeding one quickly learns how much soilage, silage, or hay the herd needs twice daily. Careful planning of crop sequences and cutting dates becomes necessary and, therefore, it gets done.

Because harvesting machinery is in regular use it seems less of a chore to store surplus forage at the right time, especially if it is made into silage.

Other advantages of dry lot feeding are important with large dairy herds. In units of several hundred head the cows have to walk long distances from the milking barn to the pasture. Muddy lanes become severe problems and extensive paving is expensive.

Maintaining pasture fences becomes a major task as does the job of proper pasture management. Large size usually makes it easier to haul the feed to the cows than drive the cows to the feed.

For years in some sections of the country dairy cows have been fed in dry lot all summer. Where fluid milk prices are high it may be more profitable to milk more cows even if feed must be purchased and there is not enough land available for pasture.

Roughage can often be purchased about as cheaply as it can be grown, especially where land prices are high. This type of a dairy operation is not recommended for the average family dairy farm, but there are some features of commercial feeding operations that deserve consideration by average dairy farms.

In the first place, no cow should be kept unless she gives enough milk to be profitable. Secondly, she must be fed so that she can produce up to her genetic ability. A good cow well fed is more profitable than two or three poorer cows. If you plan to increase the size of your herd you should cull more vigorously for high production and feed well enough so that you can tell the good cows from the poor or average ones.

Many dairy farmers feed their cows fairly well in the winter when they are in the barn. When grass comes they shout for joy as they turn their cows out. The first month or so the cows have so much high-quality pasture they may refuse to eat some of the grain offered. Later as feed gets too old or scarce they are forced to get along on the same amount of grain.

Too few dairymen have feed bunks in the yards so that hay, soilage, or silage can be fed in the summer when it is needed. Some dairymen feed silage summer and winter and vary the amount in accordance with other feeds available. Others provide hay in racks on pasture or in the yards by the barn so cows can supplement the pasture as they desire.

Check your pasture program . . .

This is the time of year when you should take a critical look at your forage program to make sure that your pastures are yielding as much milk per acre as possible. Try to anticipate forage problems in July and August and make plans to correct them before they occur. Making grass silage early to feed in summer is a sound practice.

Planting crops to be harvested as green feed is increasing in use, and, of course, hay can always be fed. Unless pastures are uniformly good, supplemental forage will keep cows in better flesh and give higher production next fall and winter.

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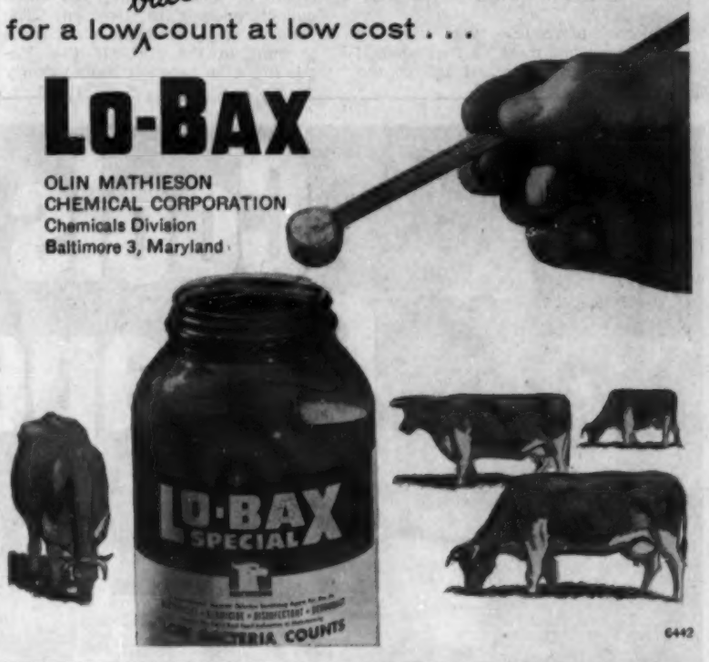

6442

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Improve soil conditions first

(Continued from page 565)

effectiveness of this fixation by testing drainage water from a heavily fertilized field. The water may be tested just like an extract from a soil sample is tested. Regardless of how much fertilizer has been applied, drainage water never contains appreciable amounts of phosphorus. It may, however, contain considerable amounts of nitrogen and potassium.

What has happened to the phosphorus?

Some, of course, was used by the crops but most of that applied as fertilizer is locked up in the form of insoluble compounds. It is "fixed" in an unavailable form. It will stay in this relatively insoluble form for many years. It is, of course, not entirely unavailable. Even the defunct bank may be paying out a small percentage of the deposits each year.

"Spoon" feeding . . .

If you had a large enough account in such a bank, you could collect enough to live on. The same is true about the phosphorus account in the soil. If the "deposit," even though only slowly available, is large enough, the corn can get all it needs.

There is a way to partly avoid getting into this dilemma. That is by "spoon" feeding the plants, placing the fertilizer into the soil in such a way that the plants may get the phosphorus but the soil particles may not. This is what the fertilizer people refer to as proper placement of the fertilizer. It is a long story, though, too long to go into now. We shall continue with it at another time.

Light sandy soils are selected for early planted crops because they warm up early in the spring. Why? Because they drain quickly and dry soil warms up faster than does wet soil. In fact it takes five times as much heat to warm a pound of water as it does to warm a pound of dry soil an equal amount.

Furthermore, if water must evaporate rather than drain out, it has a cooling effect. Who hasn't wrapped a wet piece of burlap around a jug to cool the water inside the jug? In fact, in a desert country like Arizona, houses and public buildings are cooled by evaporating water.

Have you noticed how your oats become yellow during a late, wet spring? The cold soil slowed up the activity of the billions of soil microbes so much that organic matter was not decomposed and the nitrogen was not in forms the oat plants could use. It would have hastened their work and helped the oats if some of the excess water had been removed from the soil.

Of course, a top-dressing of nitrogen fertilizer at the opportune time also would have furnished what the microbes could not make available.

Phosphorus starvation . . .

Young corn plants also suffer from cold feet. We have already pointed out how phosphorus is held firmly by soil particles and that it does not move in the soil as solutions move. That means that roots must move to it. When soils are cold, corn roots do not grow, or they grow very slowly. Then they exhaust available phosphorus supplies quickly and the plant suffers from phosphorus starvation.

You have all seen the effects of such a season. The lower corn leaves turn purple, first at the tip of the blade, then down along the edges, until the leaf may be almost entirely purple. Finally, all but the very newest leaves at the growing tip may be purple. Such corn plants are simply standing still, waiting for warmer soil so the roots may push out to new phosphorus-hunting grounds.

Such starvation conditions can be avoided, of course, by applying more phosphorus fertilizer. It is smart, though, to first improve the setting by better drainage. Sometimes even well-tiled soils may be too wet, especially if they are so high in clay that water moves too slowly into the drains.

Sometimes corn will starve for phosphorus and turn purple even where soil tests say there is plenty of phosphorus. This only emphasizes the fact that young plants are especially in need of this element. After their roots are developed and are more widespread they may regain their normal green color and become really healthy and thrifty. That is why a starter fertilizer should be high in phosphorus.

It is almost unbelievable what a high phosphorus starter fertilizer may do to the early growth of corn plants on cold, wet soils.

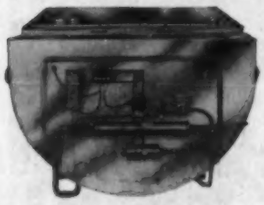
Corn may fire . . .

Does your corn fire during dry weather? This is actually nitrogen starvation. Corn will roll and dry up during severe drought periods but it does not turn yellow in the characteristically "fired" fashion unless nitrogen-starved. The condition has been blamed on dry weather because nitrogen is removed with more difficulty from dry soil.

Even more important perhaps is the fact that plants store up a little plant food when it is plentiful. We know this from tissue test results on well-fed plants.

Then when a dry spell strikes and roots have difficulty taking in sufficient nitrogen, there is some on the pantry shelves to last the leaves until rain comes and the roots find easier picking. As a re-

Solar's serpentine cooling plate has more than 80% effective cooling area. It's an integral part of the inner shell. This permits direct cooling of larger areas than other tanks. You save power costs by cooling milk only!



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It uses power sparingly. When milk temperature changes, Controlled Flow Expansion circulates just the right amount of cooling freon through the plate. When cooling is done, it returns freon to a reservoir . . . power shuts off.

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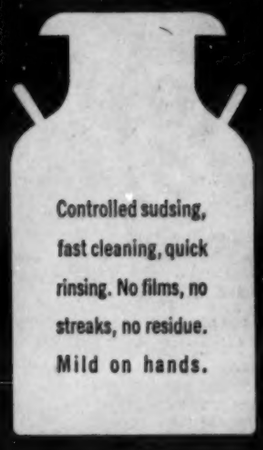

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ANOTHER B-K PRODUCT

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sult, the leaves do not turn yellow.

Perhaps you have not paid close attention to the appearance of a nitrogen-starved corn plant. It may be worth describing because soil nitrogen level determines more corn yields than does that of any other nutrient. Maybe your yields are held down by nitrogen starvation?

A nitrogen-starved corn plant gradually becomes light green in color, rather uniformly over the entire plant. On fairly good corn soils, where yields are likely to be 60 bushels or so per acre without fertilizer, this gradual loss of green color will be first noticeable about a month after planting.

Soon thereafter the lowest leaf will become distinctly yellow at the tip. The yellow color will proceed along the midrib of the leaf with the leaf edges remaining a pale green. By this time the next leaf above will start to turn yellow at the tip. Yellowing will continue as in the first leaf.

A man given to pride is usually proud of the wrong thing. —Henry Ford

As the condition becomes more severe the yellowing works up the plant from leaf to leaf. Soon the oldest leaf dies and turns brown. By that time, the yellowing is usually up to the leaf opposite the ear or even higher.

In most varieties of corn another symptom develops. The leaf sheath, the part which clasps the stalk, turns red. It is a sure sign of nitrogen starvation. Furthermore, the mature ears may reveal nitrogen starvation. They are short nubbins, poorly filled near the tip. In fact, the short cob is often bare except for a few kernels near the butt. The kernels which are present, though, are hard and well developed. This is in contrast to the chaffy, soft kernels on cobs from potassium-starved plants.

Nitrogen hunger signs . . .

We have seen adjoining corn plots look as much different from each other as the day is from night, entirely due to nitrogen. One contained corn plants which were all green from the ground up, not a single yellow leaf. Plants a few feet away in an area which did not get nitrogen were badly "fired," almost all leaves were yellow or dead and the red leaf sheaths were striking.

If you have noticed this in your field, you probably need nitrogen fertilizer even worse than irrigation. Certainly the nitrogen would be more profitable.

These are some of the soil and weather conditions which affect nutrient uptake by plants. It pays to consider them and make as many improvements as possible before purchasing fertilizer. Acid soils should be limed, wet soils drained, and tillage improved.

Droughty soils may be made better by building up organic matter and by deeper and more timely tillage. Perhaps supplementary irrigation should be provided. After doing these things, you have set the stage for most efficient use of fertilizer.

You are now ready to use the maximum quantities and expect top yields. It then becomes doubly important to select the correct ratio fertilizer for each crop on each field. Soil test results are needed. Have your soil tested and then follow recommendations.

THE END

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DAIRY FARM HOME

Are you an impulse buyer?

Careful menu and market list planning saves time and money in the store and feeds your family more nutritiously.

by Marian Pike

FOR time and money economy, plan a week's menus before shopping. Here's an example for one day:

Breakfast
Orange juice
Early morning waffles
Apricot butter
Coffee Milk

Lunch
Frank roll-ups
Tomato soup
Tossed vegetable salad
Peanutties Milk

Dinner
Wheelin' good casserole
Molded fruit salad, cottage cheese
Relishes
Angel banana torte
Coffee Milk

Market list . . .

(For the above day's menus excluding usual staples)
1 head lettuce
1 bunch radishes
1 pound apples
1 pound grapes
1 pound bananas
1 bunch parsley
¾ pound butter
1 pint cottage cheese
1 gallon, 1 quart milk
1 can frozen orange juice
1 package frozen succotash
1 can tomato soup
1 can cocktail peanuts
1 package gelatine dessert
2 cans tuna
¼ pound bacon
12 frankfurters
10 eggs

KEEP BILLS DOWN—with careful planning.

Watch weekly food ads for "specials" and in-season foods.

Check your menus and shelves for what you need; arrange market list according to items and store layout.

Buy economically; buying in quantity saves pennies only if family can use or store it.

Read labels; they tell you many important things.

Compare price with number of servings you will receive.

Load your car carefully; heavy items on bottom, soft items on top.

Early Morning Waffles

Topping:
½ cup soft butter
½ cup apricot preserves
Bacon Waffles:
2 cups milk
2 eggs
⅓ cup melted shortening
2 cups pancake mix
¼ pound bacon, cooked and crumbled

For topping, beat butter until light and fluffy; add preserves. Continue beating just until butter and preserves are blended.

For waffles, place all ingredients except bacon in bowl; beat with rotary beater until fairly smooth. Lightly stir in bacon. Bake in hot waffle baker until steaming stops. Serve with apricot topping. **Makes 6 servings.**

The secret to getting a meal on the table all at once is planning its preparation step by step. For this quick lunch menu use enriched corn meal for a delicious hot dog and cheese blanket. To complete the lunch, heat the soup; toss a salad; and serve oatmeal cookies made ahead of time.

Frank Roll-Ups

12 frankfurters
¼ pound sliced Cheddar cheese
1½ cups sifted enriched flour
1½ teaspoons salt
3 teaspoons baking powder
⅔ cup enriched corn meal
½ cup shortening
⅔ cup milk
Melted butter
Sesame seed
Barbecue sauce

Heat oven to hot (425 degrees). Slit frankfurters lengthwise almost through. Fill slit with pieces of Cheddar cheese.

Sift together flour, salt, baking powder, and corn meal into bowl. Cut in shortening until mixture resembles coarse crumbs. Add milk, mixing only until dampened. (Add a little more milk if necessary.) Turn out on lightly-floured board. Divide dough in half. Roll each half to form a 14-inch circle. Cut each into 6 pie-shaped wedges. Place frankfurter, slit down, on wide edge of wedge. Roll up; brush with melted butter; sprinkle with sesame seed.

Bake on cooky sheet in preheated oven (425 degrees) about 15 minutes. Serve with barbecue sauce. **Makes 6 servings.**

Peanutties

1 cup soft butter
1½ cups brown sugar
2 eggs
2 cups sifted enriched flour
2 teaspoons baking powder
1 cup salted peanuts
1 cup quick or old-fashioned uncooked oats.

Heat oven to moderate (375 degrees). Beat butter until creamy. Add sugar gradually; beat until fluffy. Add eggs; beat well. Sift together flour and baking powder; add to butter mixture; beat well. Stir in peanuts and oats. Drop from a teaspoon onto buttered cooky sheets. Bake in preheated oven (375 degrees) 10 to 12 minutes. Remove from cooky sheets immediately. Cool.

Frost if desired with chocolate frosting made from **2 tablespoons milk, 1 cup sifted confectioners' sugar and 1 ounce unsweetened melted chocolate.** Sprinkle with **chopped peanuts.** Or frost with peanut butter frosting, made by combining **3 tablespoons milk, 1¼ cups sifted confectioners' sugar,** and **½ cup crunch-style peanut butter.**

Plan this penny-saving dinner for smooth operation. Make the angel banana torte cake and let cool. Cook pudding filling and assemble torte. Top with strawberry preserves and place in refrigerator. At serving time garnish with sliced banana.

Make the gelatin salad mold several hours before dinner time. Refrigerate until serving time.

Prepare the casserole filling. Mix biscuit dough; form pin-wheels. Place on casserole filling and bake.

Prepare relishes; chill. Set table. Turn out salad mold and center with cottage cheese.

Wheelin' Good Casserole

Base:
3 tablespoons butter
¼ cup flour
1 teaspoon salt
¼ teaspoon pepper
2 cups milk
1 tablespoon dry onion flakes
One 10-ounce package frozen succotash, cooked and drained
Two 7-ounce cans tuna, drained
Biscuits:
1½ cups sifted enriched flour
3 teaspoons baking powder
1 teaspoon salt
½ cup quick or old fashioned oats, uncooked
⅓ cup shortening
½ cup milk
Melted butter
3 tablespoons chopped parsley
3 tablespoons chopped pimiento

Heat oven to very hot (450 degrees) For base, melt butter; stir in flour, salt, pepper. Gradually add milk, stirring constantly, until thickened. Combine rest of ingredients with hot mixture. Pour into 12x7½ x2-inch casserole.

For biscuits, sift together flour, baking powder, and salt into bowl. Stir in oats. Cut in shortening until mixture resembles coarse crumbs. Add milk, mixing lightly only until mixture is dampened. (Add a little more milk if necessary to make a soft dough.)

Turn out on lightly-floured board; knead gently a few seconds. Roll out to form 10x12-inch rectangle. Brush with melted butter. Sprinkle parsley and pimiento over dough. Roll up as for jelly roll. Cut in 1-inch slices. Place in 4 rows over hot tuna mixture. Bake in preheated oven (450 degrees) 15 to 20 minutes. **Makes 6 servings.**

Angel Banana Torte

Cake:
¼ teaspoon salt
2 eggs
½ cup sugar
⅓ cup mashed banana
⅓ cup pancake mix
Filling and topping:
1 package vanilla pudding mix
2 tablespoons strawberry preserves
Banana slices

Heat oven to moderate (350 degrees). Butter bottom and sides of a 7x11-inch pan; line with waxed paper; butter again and flour.

Add salt to eggs; beat until thick and lemon-colored. Add sugar to eggs, a little at a time, beating well after each addition. Add mashed banana and pancake mix; stir until smooth. Spread evenly in prepared pan. Bake in preheated oven (350 degrees) 18 to 20 minutes.

Immediately on taking cake from oven, loosen edges and turn out on rack. Peel waxed paper carefully from cake. Cool. Cut in three 3¼ x 7-inch pieces.

For filling, cook pudding according to package directions. Cool. To assemble, place one layer of cake on serving plate. Spread with pudding. Repeat with other two layers. Garnish top of cake with strawberry preserves and banana slices. **Makes 6 servings.** **THE END**

From Day to Day

by Lois J. Hurley

EARLY in March, the Textile Fiber Products Identification Act was passed for the purpose of protecting producers and consumers against misbranding and false advertising of fiber content of textile fiber products.

This act covers wool, fur, products made of cotton, man-made fibers, silk, and any other fiber in excess of 5 per cent in an article. Labels attached to articles and materials must contain, in English, fiber or fibers by percentage of weight and by generic names in the order of predominance; the name, registered number or trademark of the manufacturer or seller. All who handle the article (mill to retailer) are responsible for correct labeling.

Sixteen generic names have been created for man-made fibers:

Acrylic (acrilan, creslan, orlon, zefran); modacrylic (dynel, verel, fiber T); polyester (dacron, kodel, vycron, teron); rayon (viscose, cuprammonium, fortisan, corval, topel); acetate (acetate, arnel); nylon, saran,

Nytril (darvan); azlon (not manufactured in U. S.) rubber, spandex (fiber K); vinal (vinylon); olefin, vinyon (industrial fiber); metallic, glass.

Clothing and textiles specialists warn that the labeling act won't solve all the homemakers' problems for they won't tell how the article will perform nor will they serve as the sole guide to quality. Draperies, floor coverings, towels, tablecloths, and many housekeeping items will be included, as well as clothing, and the label will help somewhat in their purchase, but won't furnish complete protection.

It seems to me that the effectiveness of the new labels might well be strengthened by a stiff **course of instruction for retail clerks.** By and large, my personal observation over the last few years when we have been confronted with so many new man-made materials, is that the clerks who sell them are abysmally ignorant of not only their content, but their performance.

Another point on which I would wish relief is in the bordering of Turkish towels. There is nothing more maddening than towels whose decorative borders pucker when washed. Surely, the use of identical fibers or threads on both towel and border should do away with this bugaboo.

Papering pointers . . .

If you're planning to do any wall papering this spring, a few hints from our state home furnishings specialists may be helpful.

First, a few words about the terms single and double rolls of wallpaper: These apply to the length; the number of feet that are in a roll and this goes according to the width of the paper.

Wallpapers come in 18-, 22-, and 30-inch widths. Single rolls of 18-inch paper are 24 feet long but they are packaged only in double rolls, which gives you 48 feet. The 22-inch-wide paper comes in a double roll of 42 feet and a 30-inch paper comes only in a triple roll, which is 45 feet, 3 feet more than a double roll of 22-inch paper.

Whoever figured out that zany deal was probably carried away by little men in white coats, but if you can get it straight, it may help you figure out how much paper you'll need for a room, if you know how to deduct for windows and doors.

Your best bet is probably to have your husband measure the dimension of the room (width, length, and height) and let the wallpaper man tell you how much you'll need.

Before you paper a wall, it may need a little repair work. If there are wide cracks, better fill them with patching plaster, our expert warns, and smooth out any small rough spots with No. 2 sandpaper. If a wall is greasy, wash it and apply sizing, specially made for this purpose and purchasable at your wallpaper store. Walls often need to be sized before painting.

Washing tips . . .

Fresh, crisp curtains are one of the nice things about spring cleaning. There are two kinds that you need to handle carefully.

First are glass fiber curtains. Wash them in mild detergent and warm water, say our house furnishings experts, and let them drip dry. Wringing them may break the glass fibers.

The other problem curtain is the shower curtain. If the label says it is machine washable, use the short cycle on your machine and wash in warm water and mild detergent. Rinse, then hang curtain up to dry; putting it through the spin cycle may result in deep creases that you cannot get out.

Speaking personally, I have had the coated back shower curtains build up an ugly soap deposit on the inside that will not come off in machine washing. For these, I have scrubbed the back of the curtains with a rubber or soft-bristled brush and the scum comes off.

Spots away . . .

In a recent issue I "griped" about the difficulty of getting grease spots out of dark, solid cottons. Following are some of the tips from readers:

"Try kerosene; I used it successfully on a dark green Christmas table cloth, a part-rayon, vat-dyed California hand print cloth."

"Pine oil applied to grease and extra dirty spots in linens, colored garments, men's shirt collars and cuffs, before washing, will remove them. Rubbing may be necessary on stubborn stains. Soda ash added to wash water helps to remove grease." (Hard on fabrics and colors, though.)

"Sponge the grease spot with vinegar before you launder it; when a tablecloth has grease spots I just soak the whole thing in vinegar and they disappear."

"I absorb grease spots with powdered starch, cornstarch or flour. Rub it into the fabric; run over with a hot iron; let stand several hours and brush off. May have to be repeated on stubborn stains."

I offer these suggestions just as they came in to me; I do not recommend them from experience.

Best way to dampen . . .

Spraying clothes with a fine mist of warm water and letting them stand a few hours so moisture will spread evenly through fabric is the best way to dampen clothes for easiest, smoothest ironing. Fold them loosely and tuck them into a plastic bag or cover with plastic sheeting. Over-dampening or rolling or folding too tightly just adds wrinkles.

1411. A graceful, feminine dress for afternoon wear that's as welcome as a compliment to a woman's figure. Sizes 34, 36, 38, 40, 42, 44, 46, 48. Size 36, 38 bust, cap sleeve, 5¼ yards 35-inch. Price 35 cents.

8118. Sew this simple sundress in a bold print; trim the bolero in a bright contrast. Wear this young pair everywhere. Sizes 10, 12, 14, 16, 18, 20. Bust 31 to 40. Size 12, 32 bust, dress 4½ yards 35-inch; bolero, 2½ yards and ⅝ yard contrast. Price 35 cents.

8330. This carefully-tailored shirtwaist dress takes you anyplace, anytime with confidence; with or without sleeves. Sizes 12, 14, 16, 18, 20. Bust 32 to 40. Size 14, 34 bust, with sleeve, 3⅝ yards 35-inch. Price 35 cents.

8323. A cute little playdress and panties for a tot of 1 to 5 years. It's sew-simple, you will want to make up several sets. Sizes 1, 2, 3, 4, 5 years. Size 2, dress, 1⅝ yards 35-inch or 39-inch; panties, ¾ yard. Price 35 cents.

8206. So simple in design, so smart in line that you will want to sew several versions of this youthful sheath and jacket ensemble. Sizes 12, 14, 16, 18, 20; 40, 42. Size 14, 34 bust, dress, 3¼ yards 35-inch; jacket, short sleeve, 1⅛ yards. Price 35 cents.

8235. Comfortable to wear, easy to take care of, and so flattering, this button-front classic comes in half sizes. Sizes 12½, 14½, 16½, 18½, 20½, 22½, 24½. Bust 33 to 45. Size 14½, 35 bust, 4⅞ yards 35-inch. Price 35 cents.

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POULTRY

by Joe W. Sicer

Springtime tips

Good management with poultry is largely a matter of doing little things well. But if you neglect little things, you may soon find yourself in big trouble.

MOST of us usually will do a good job of taking care of baby chicks. We will spend enough time in the brooder house to make certain the temperature is right, the brooder stove is operating satisfactorily, the chicks have enough feed and clean water, and all chicks are looking bright and healthy. Maybe it is just a natural attraction that the house full of fluffy babies has.

It is after we get them past those first few weeks of "chickhood" when we are inclined to let down. Most people don't consciously let down. It is just that other matters are often pressing in the rush of spring work, the chicks are doing fine, and their need for continued close attention simply doesn't seem so demanding.

Sudden "warmups" . . .

The first thing which sometimes jerks us up with a start is finding the chicks panting for dear life when we finally peek in the brooder house on one of those days that warmed up quickly as the sun ran the thermometer to a new high for spring. There is danger in those sudden warmups. On such a day, a window adjustment that was fine in the cool of early morning is all wrong a few hours later. As the day progresses go back to the brooder house and open those windows wider, and doors if need be.

Be conscious of that beaming sun! When a house with an abundance of glass on the south side is closed too tightly the temperature can skyrocket to cause definite harm and perhaps even death.

Get the birds roosting . . .

Put roosting poles in houses of growing egg-type pullets by the time chicks are 4 weeks old. The simplest way is to merely put the poles about 15 inches above the litter. In many flocks these poles will be used considerably during the daytime right from the start. As the chicks grow an increasing number will stay on the perches at night. Once the birds are roosting, danger of piling is largely past.

Perch poles should be painted with anthracene oil several days before they are placed in the brooder house. Doing this is one of the best means of preventing

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Read your direction sheets again. Treat the cow as recommended. The correct dosage for controlling acute mastitis, chronic mastitis, and dry cows is indicated in the direction folder.

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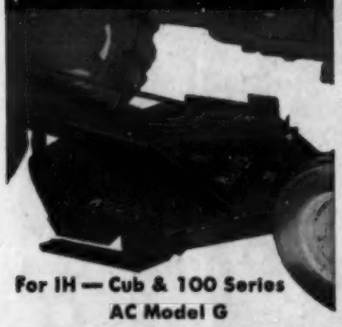

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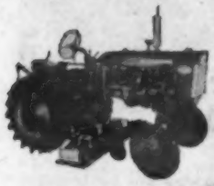

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trouble with red mites. One painting and your mite worries are over for a year. Anthracene oil is somewhat like creosote but is more penetrating. It is sold under several trade names.

When using anthracene oil, it is necessary to allow several days from time of painting to putting the poles in use to permit excess oil to soak in or evaporate. Direct contact of chicken's skin with oil may cause an irritation.

Keep brooders ready . . .

Some people make the mistake of rushing the season. Weather is fine; chicks are well-feathered; apparently, the need for brooder heat has passed. So out go the brooders, stored away.

Then Mother Nature cuts loose again with another cold spell! It can happen even in June.

Brooders should remain in the brooder house and be ready for use on short notice until chicks are at least 8 weeks old. Often just a little heat will prevent a pile-up, make smoother and cleaner birds, keep litter dry, and turn a cold snap into just some more weather instead of a cause of worry, concern, and possible loss.

Adjust feeders and waterers . .

As chicks grow, raise feeders and waterers to a level about as high as their backs. Less litter will be scratched into the feed and water. Trough-type waterers at this height, with water at not more than one inch in depth, will result in less dripping of water by the chicks.

When water founts are used, it is wise to put them on wire covered platforms so the chickens cannot get to any litter which may become wet.

Use feeders of right size to fit your birds. This may sound absurd to many of you careful poultrymen. It is amazing, though, how often people try to use little chick-size feed troughs throughout the growing period, causing considerable feed wastage.

Use feeders built to keep chicks out and feed in. It is all right to economize by using home-built feeders. An open trough, however, with no inner projecting lips (to keep feed from being billed out) and no protecting reel or other arrangement (to prevent scratching in feed) is not economical.

On range, put feeders on a sodded area. Stay away from the bare area close to the brooder house. Move feeders a bit every day so the grass is not tromped out around the feeders.

A good manager fills feed troughs only one-half full. And he does not let troughs stay empty when pullets are confined. Hunger is a demanding force that can quickly drive chickens to cannibalism.

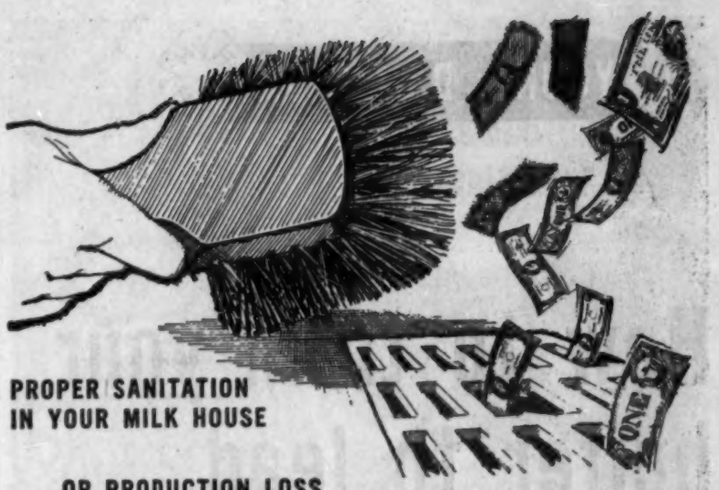
Ventilate liberally . . .

No item is of greater influence on chicks than fresh, pure air.

During the brooding period, a good manager knows it is false economy to save fuel at the expense of shorting ventilation. As pullets grow, amount of ventilation needed becomes greater.

Once pullets are roosting, and are well-feathered, windows can be opened wide except in unusually cold weather. Guard against drafts in cool weather. As warm days become the rule, however, wide-open cross ventilation will be in order.

These are not all the things which need to be watched during brooding and growing periods. They are, however, a few of the little things, which, when put together properly, will build pullets well able to cash in on good egg prices that seem to be in prospect soon.



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YOUNG DAIRYMEN

How to train your heifer to lead

If started early, it is not difficult. The secret is practice, patience, and kindness. Heifers and cows that can be led are more valuable.

by Melvin Scholl

SHORT TRAINING PERIODS are better than a few long ones. The calf will be more willing and the regular exercise is beneficial.

IT SHOULD be the aim of every young dairyman to own a halterbroke herd. The advantages in having such a herd far outweigh any inconvenience or expenditure of time in acquiring it.

Furthermore, when animals are trained as heifers, the task is much easier than one would suppose. In fact, it can be interesting work in that it gives a young dairyman his first real chance to get acquainted with his animals and to see them respond to direction and authority. The lesson, moreover, will hold throughout the animal's life.

Every dairy animal should be taught to lead whether or not you intend to show cattle. It makes no difference even if you handle your animals in a milking parlor. It still is a fine thing to be able to put a halter on any member of the herd when desired.

How many times have you had to show an animal to a buyer and wished you could go out and catch her and bring her in with a halter? How much time have you wasted in trying to run her down, and then, when you finally were able to get near her, discovered how difficult it was to look her over?

A great deal of time and trouble are saved when an animal can be caught with a halter when you wish to breed her, or to bring her into the barn when she is sick or has to be treated for an injury, and so forth.

The first lessons . . .

Start training the dairy animal to lead at an early age. One of the first steps is to tie the heifer in the barn, getting her used to the halter. You will find, in most cases, that a little grain or choice hay will stop her from worrying about the halter.

Brushing will lessen stress and reassure her of your intentions. Try leading her to water at first.

Be patient! If the heifer sulks, wait until a later time to continue training. Short training periods at first will get better results.

As you return from watering, spend a few minutes teaching her to lead, stop, start, and the like, always trying to get her to take as short steps as possible. This is good discipline. Remove all leftover hay and replace with fresh. Then groom her well.

A properly-fitted halter should be used to be sure the calf is secure. A rope halter is preferable for the first week or more. Then the animal will not fight the show halter so much.

Leave the heifer tied with her halter for short intervals until she learns she cannot get loose. If she fights the rope halter persistently, tie a knot in it so it will not tighten severely around the jaw. This will allow her to eat and prevent rope burn. After the heifer becomes used to this new restraint, start leading her around in the shed. Later on, lead her to places other than those visited during regular feeding routine.

Avoid double trouble . . .

Many calves and heifers are quite wild at first, especially if it is an older calf you have started to train. Under no circumstance allow the heifer to get away from you. Once she has accomplished this, you will have double trouble in breaking her to lead. Try to have help around, if needed, until the calf becomes somewhat gentle.

Leading should become a daily practice, not only for training to lead but also for exercise. It stimulates an appetite in addition to keeping the animal thrifty.

In warm weather it is a good idea to turn heifers loose in paddocks at night. Halters should be left on, with straps tied securely around the neck so the animals will not trip on them. In the morning it will be an easy matter to catch the heifers. You will have a clean barn, the animals will eat better, and be more satisfied to be tied up during the day.

Gentle treatment helps . . .

The heifer must be treated gently at all times. The trainer should make friends with the animal as soon as possible. Avoid loud talking and quick movements when handling the calf. Heifers that have never been mistreated have a natural inclination to respond to any attention by their human masters.

When you are ready to start leading the calf, adjust the halter so it is about four inches above the nose. Then the halter won't slip off so easily as it might if it were adjusted too low. That adjustment also will give you best control of the animal.

The important thing in leading is to maintain a firm enough grip on the lead strap so it can't be jerked out of your hands. Try not to pull a calf along, as this encourages fighting the lead.

A little slack in the rope and standing off to one side will often make the stubborn calf much more cooperative. Do not jerk her around, but keep a tight hold. She soon will learn to respond to the gentle tug of the halter, will turn in the desired direction, and will be more easily trained to stand correctly.

A few don'ts . . .

Never attempt breaking an animal to the halter when the ground is wet or icy. You may lose your own footing and the animal will get away or, the heifer may slip and hurt herself. This is especially risky with a pregnant animal.

When a calf finally accepts the idea and seems fairly willing to be led, don't overdo it. Experience has shown that short regular sessions are better than a few long ones. The calf will be more willing and the regular doses of exercise are more beneficial.

Once or twice a week should be sufficient, except for preparation for a sale or show, when daily practice is advisable.

Encourage the calf when she is cooperative; reward her. Let her know when you are satisfied with results.

If the heifer appears to be easily frightened, you should try to reassure her by exposing her to new situations and locations during each training period, after the first lessons. Have people touch and feel your heifer as the judge will do if you show her. This will teach her not to be skittish. In this way, get her used to all kinds of noises. This will insure a more

normal disposition under all circumstances.

Pampering heifers is a bad practice. A heifer should have her freedom and be allowed to rough it. But, training them to lead and come up to you outside in the yard or pasture is not a breach of proper heifer upbringing. Then, when the heifer becomes a cow and must be confined and tied, she will quickly adapt herself.

Teaching the finer points . . .

If the animal is halterbroke, the job of training show animals is already well under way, as respect for the halter is the first requisite. The animal should be trained to move forward without being dragged out of her tracks, and she should stop at whatever signal you choose to teach her. These things are largely a matter of handling the heifer often so that she understands when you expect her to move forward and when you want her to stop.

Most well-trained animals seem to appreciate the fact that they look their best when the head is up, the ears erect, eyes sparkling, and the back straight. If they can be trained to assume this position for short periods under familiar surroundings, they will hold it for much longer periods under the excitement of the show ring.

A well-trained animal will start at a very slight signal, just a syllable or a light quiver on the lead strap. One of the hardest things to teach an animal is to use short steps, but to be stylish in the show ring, a heifer must look alert at all times and should move with short, slow steps.

To help train her in this method, hold the lead strap very close to the halter with the left hand. To slow her down, place the right hand just above the shoulder joint and push back while leading. Make her walk slowly and deliberately with her head up.

Get her accustomed to moving her feet with a touch of your toe but, by all means, never let her play. Make her behave whenever you have the show halter on her.

The awkwardness of untrained animals is largely due to the fact that in starting and stopping they pull themselves all out of shape; and it is a real effort to get them straightened out again. If the animal is trained to walk slowly, short steps are likely to come without much special work, and the animal will be more certain to stop in a normal position.

Frequent starting and stopping also get the animal in a mood to stop with the feet well placed, as there is no comfort in standing with the weight unevenly distributed. There should be a leg under each corner of the heifer. This not only gives her a well-balanced stance but also shows her width to full advantage. This presupposes that an animal's feet are kept trimmed; an animal cannot walk or even stand correctly unless the feet are in condition.

While she is being groomed, tie her head up, getting her about the height at which the particular animal will look her best in the ring. This little practice teaches her to stand properly on her feet and to be patient. It is the best way of training there is. Leave her head tied up in this manner for half an hour each day, but don't forget to let her head down so she can eat and lie down.

Scrubbing and washing are one of the best training exercises for an animal, besides giving tone to the skin and promoting a healthy appetite. A trip in a truck does wonders, too, in taking the conceit and breachiness out of an animal. So, even if she fails to win at her first show, a heifer receives valuable training that will make her a better animal at later shows, and will improve her chances of winning.

Walk on left side . . .

The proper method of leading a heifer in the show ring is for the leader to walk on the left side of the animal with the lead strap held in the right hand fairly close. The slack at the end may be held in either hand.

The accepted method of holding whenever the judge is inspecting your animal is to stand on the heifer's left side and grasp the halter strap in the left hand. Place your right hand on the point of her shoulder. In this manner, with a little pressure, you can move her forward a step or back her up with very good control — or shift weight so she stands with feet placed squarely under her.

A heifer that is easy to lead is much easier to care for, and more interesting to work with. She will save you time, effort, and your temper. And, in the end, a herd of cows that can be led is more valuable dollar-wise. **THE END**

THERE IS A CAREER FOR YOU IN AGRICULTURE

A guest editorial

TODAY, tomorrow, and always . . . there's a big job ahead for a competent young man in agriculture!

Agriculture is a science, a business, a profession, an industry. Agriculture provides more jobs and careers in the city than on the farm . . . more jobs and careers than any other industry.

About 40 per cent of all jobs are in agriculture, jobs important to everyone, jobs with futures, jobs with financial and personal rewards.

Agriculture supplies our food, most of our fiber, and some of our building materials. As long as we eat, wear clothes, and live in houses, there'll be jobs in agriculture.

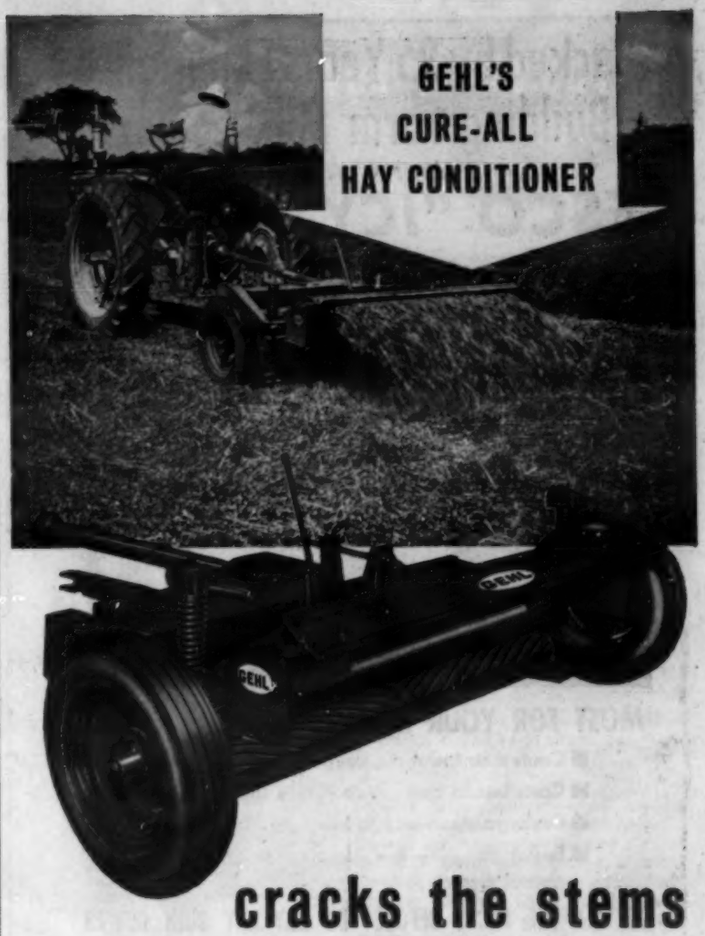
You could actually count more than 500 distinct occupations in the eight major fields of agriculture. Recent surveys indicate that these eight fields each year would and could employ about 15,000 new college graduates . . . if 15,000 with agricultural college training were available.

At present, our Land-Grant agricultural colleges graduate about 8,500 young men and women each year in agricultural sciences . . . 8,500 trained persons to fill 15,000 jobs, or about two futures for every graduate.

Our high school vocational agriculture departments and 4-H clubs are carefully training our young people in preparation for these jobs. In addition, they have the responsibility of preparing skilled farm operators, the basis of the entire field.

Where else can you find more opportunity, more challenge, more of a possibility for success?

—D. W. SCHEID
Vo-ag Instructor
Wisconsin



cracks the stems from bud to butt

Gehl's Cure-All keeps the pressure on the rolls . . . matches roll clearance and conditioning action to the crop you're curing. This full adaptability makes swath pickup a clean, field-sweeping job.

And the Gehl is no loafer. It crush-cures at fast speeds . . . lifts the swath with a herringbone rubber roll working against a steel conditioning roll. It splits the stems from bud to butt — does it gently with Gehl leaf-saving action, so quiet you can hear the stems pop. In combination these two Gehl rolls pick up the swath — open the stems — lay the swath back with the butts up, leaves down — away from the sun.

Gehl adjustable spring pressure adapts roll action to varying weight forage mixtures — from light and slick grasses to heavy-weight alfalfa. Flip-lever pressure release cures the problem of clearing rolls if stones, sticks or wires are picked up in the field — the clogging slow-downs that shorten tempers when time is important.

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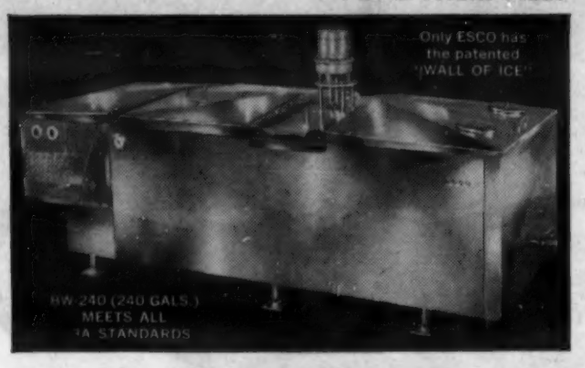

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Trial Offer 3 Permasoft Uddersponges and 1 Roldip dipper—postpaid, $1.75. No stamps—cash or check.

ROLL DIPPERS INC., Maumee, O.

Also manufacturers of ice cream dippers and spades since 1938

HANDY HINTS

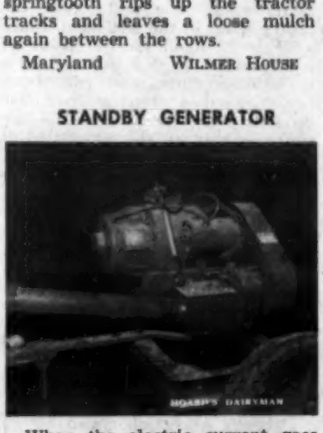
CORN ROW MARKER

We took a 2 by 2 strip of wood, 120 inches long, and bolted it to the front of our tractor so that there was 60 inches extending on either side. At the end of this wood strip, we bolted a piece of strap iron that almost touched the ground. By keeping this marker over the corn row that was just planted, we are able to keep our rows 40 inches wide. If you wanted 38-inch rows, you merely would have to drill another hole and bring the two end markers in 2 inches on each end. We are able to keep our rows straighter since we can always look straight ahead.

We also put an extension on our corn planter frame and put a standard springtooth on each side which comes directly over the middle of the row where the tractor tire has compacted the soil. This springtooth rips up the tractor tracks and leaves a loose mulch again between the rows.

Maryland WILMER HOUSE

STANDBY GENERATOR



When the electric current goes off during a bad windstorm, many dairy farmers are faced with the problem of trying to milk 40 or 50 cows by hand. We solved this problem by going to our electric supplier and ordering a generator. We rigged up a trailer to hook on behind our tractor so that we could run this unit with our power-take-off.

Now when the current goes off, we have our own electric power plant that we can hook into our power line.

New Jersey GILBERT HARTUNG

KEEP COWS OUT OF BUNK

To keep our livestock from jumping into a low feed bunk, we strung an electric wire about 1½ feet above the center of the bunk.

Minnesota MRS. LEO KRITZECK

PORTABLE STAGING

We constructed staging and scaffolding to a homemade trailer that is used for painting and repairing high places around the farm.

Staging is built from used 2 x 4's and 2 x 6's. Catwalks were built every 7 feet. Ladders were placed on the inside of the scaffolding to reach the different levels.

This is not only a labor-saver but a safety measure, as well.

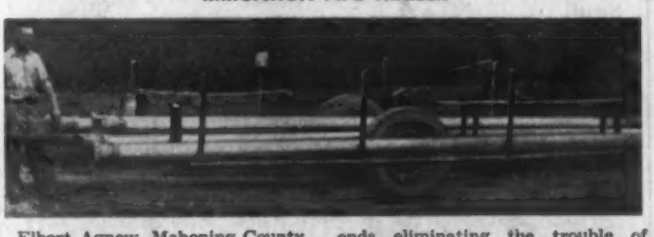
Pennsylvania GRANT HEILMAN

PREVENTS RUST

Nail a half-gallon syrup pail to the inside of a studding in the tool shed and fill it half full with used crankcase oil. Then drive a nail into the wall just above the pail so that an old discarded paint brush can be hung there. Also keep a piece of sandpaper and a good-sized rag there. When you are through using a hoe or shovel, clean off the dirt, brush it with oil, and put the clean tool away.

Iowa HAROLD NEWBERG

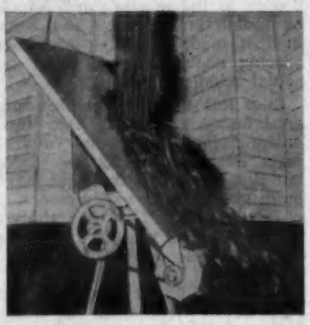
IRRIGATION PIPE TRAILER



Elbert Agnew, Mahoning County, Ohio, built this handy irrigation pipe trailer. The entire framework is made out of steel tubing. There is a tractor hitch on both ends eliminating the trouble of always going to the end with the hitch. The simple trailer is both light and strong.

Ohio JOHN KRILL

Distribution Pays . . .



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Why does motor oil get dirty?

(Continued from page 571)

piston ring grooves in the engine.

Soon after a quality oil containing a detergent dispersant additive is placed in the crankcase, it may become discolored. In a gasoline motor, the color may range from a dark chocolate brown to a light gray. In a diesel engine, the oil may turn black.

Discoloration is due, of course, to contaminants which build up in the oil. The purpose of the detergent dispersant is to keep the engine clean by maintaining the contaminants as finely-divided particles suspended in the oil itself. As long as these particles are suspended in the oil, they are not building up as a coating on the moving parts of the motor.

There is a limit to how much contamination oil can hold and it is important that it be drained before this point is reached.

Generally, the dark brown discoloration is due to oil oxidation products and varnish formations. The grayish discoloration may be caused in part by dust and dirt and in part by the presence of lead compounds from the combustion of fuels containing tetraethyl lead. It takes only a small amount of lead to cause the gray discoloration. However, the presence of lead compounds in the oil is not harmful either to the engine or to the oil.

Excessive dilution of crankcase oil with unburned gasoline sometimes causes a lubrication problem. The amount of dilution that will take place depends upon a variety of things, some of which are operation temperatures (previously mentioned), air fuel ratios, fuel volatility, and the mechanical condition of the engine. Frequent and prolonged use of a hand choke or improper adjustment of an automatic choke will increase the amount of gasoline which reaches the crankcase.

Dilution reduces oil viscosity and as a result may be responsible for increased oil consumption. Further, certain components of the fuel may contribute to varnish formation.

With engines burning LP gas or properly-operating diesels, there is no crankcase dilution. Here the oil tends to thicken in service rather than thin. If drain periods are extended beyond those recommended, the thickening may become sufficient to impair lubrication and result in costly repair.

Provide clean air . . .

One of the greatest enemies of motor oil is dust and dirt. Large quantities of this entering the engine through the air intake system as the result of faulty air cleaner and crankcase breather service actually convert the oil to "liquid sandpaper."

The need for servicing the air cleaner and the oil filter according to the manufacturers' instructions cannot be overemphasized. Make sure that there are no air leaks in the intake system.

Quality oils have a variety of additives in them to combat the effects of contaminants. After a period of time, these additives become used up and can no longer do their job. If the engine is to be protected then, the oil must be drained and replaced with new.

Engine manufacturers give specific recommendations regarding crankcase drain intervals. Follow them, keeping in mind the factors that cause oil contamination. This will give you maximum service from your equipment with the greatest economy. THE END

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LEANING SILO began to give way four days after 40-foot depth of corn silage was stored in it.

CRUSHED STAVES near bottom seemed to cause failure. Downward force is caused by friction between wall and settling silage.

COMPLETE COLLAPSE occurred when the hoop near middle of silo broke. Part of the crop was saved.

Check your silo before filling

by D. W. Bates

An examination of older silos may reveal structural weaknesses you didn't suspect. Filling a silo in poor condition is a bad risk.

LIKE other farm structures, silos depreciate over a period of time. Evidence of weakening, however, may not be obvious. Sometimes it is assumed silos made of such materials as concrete, tile, or steel will last indefinitely. While silos made of these materials do have great durability, depending upon design and maintenance, they can't last forever.

If you have an older silo, it is important to give it a careful inspection each year before filling.

Generally, the condition of silos with external hoops can be much more easily assessed than can the condition of those with internal reinforcing. If the walls are tight (do not show undue evidence of deterioration) and the hoops are in good shape, there is little to worry about, if the silo is filled with a material it was designed to hold.

There is no practical way to accurately evaluate the condition of reinforcing imbedded in silo walls. Silage juices which penetrate the walls can disintegrate the reinforcing to a point where it will hold little or nothing.

The condition of the internal reinforcing can be partially judged by the condition of the walls. It is reasonable to assume that more juice will penetrate walls in poor condition than those in good condition. It follows then, that if the walls are deteriorating, so is the reinforcing.

The fact that the walls look good is no guarantee that the reinforcing has not been damaged over an extended period of service.

The author is an extension agricultural engineer, University of Minnesota.

What about wood silos?

There are a variety of wooden silos still in use. The wood stave silo has been widely used in years past. Such silos require periodic adjusting of the hoops to compensate for swelling or shrinking of staves with changes in moisture.

Because it takes considerable time to make such adjustments, they are neglected. As a result of this, and because of insufficient bracing or guying, wood stave silos frequently collapse when empty. If they are too tight, the walls may buckle. If they are too loose, there may be undue spoilage of the stored crop.

A few "wrap around" wood silos are still in use. These were designed for corn silage and should not be filled with other materials.

With the increased practice of making ear corn and shelled corn silage, the question often is asked, "Can I put it in my old silo?"

A silo which will hold grass silage will safely hold ear corn silage. For shelled corn silage, additional hooping may be necessary.

Usually, with silos over 30 feet in height, added reinforcement is needed in the middle third. A rule of thumb is to double the hoops in this area, extending one hoop spacing above and one below the actual middle third.

Silos less than 30 feet high may need added reinforcing over their entire height for shelled corn silage. Perhaps this sounds "fishy" but it is due to the fact that maximum grass silage wall pressure at a low height is less than that of shelled corn silage. Also, the pressures increase with height at different rates.

In case of question, the safe rule is to check with the manufacturer of the silo.

Where reinforcement is contemplated for a silo with internal reinforcing to make it safe for shelled corn silage, it is best to disregard any present reinforcing. Add hoops as if none were present in the walls. The most practical answer is, "Don't put shelled corn silage in such a structure."

There is always the temptation to fill an old silo "just once more." A conservative approach in this regard has much merit. The silo which bursts or overturns may cause personal injury or injury to livestock. In any event, much of the silage put into it will be lost.

It is better to let the silo go out of use a few years early than to take a chance on its bursting or falling down.

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"ROBOT" CONTROL frees farmer from gazing steadily at one row.

Automatic steering is here!

By Melvin E. Long

AUTOMATION of the farm tractor has become one step closer with the announcement by one major tractor manufacturer of an automatic tractor guidance system. When a tractor is equipped with power steering, the next logical step seems to be to equip it with a device for automatically controlling the power steering system.

The cultivation of corn and other row crops demands the undivided attention of the operator. Today's tractors usually are capable of cultivating speeds higher than the driver can conveniently control. However, with this "robot" control, the operator is freed of the necessity of gazing steadily at one row. Instead, he is free to watch the complete cultivator, making sure that it does not clog with weeds or trash, and to see that it is in the best possible adjustment.

"Feelers" straddle row . . .

The device works like this: A pair of curved rods straddle the row of plants and act as "feelers." If the row curves in either direction, the feeler rod on that side is pushed outward. This movement closes a small electric switch, which, in turn, causes an electric motor to turn a nut and screw arrangement which tends to either lengthen or shorten the steering system drag link. This, in turn, operates the power steering control valve. The valve then causes the power steering system to turn the front wheels in the direction in which the feeler rod was moved.

Thus, the tractor follows the curve of the row. Or, if it tends to wander off a straight row, the device operates in the same way to move the front wheels just enough to keep it on the row.

The driver can "over-ride" the system at any time he so desires. However, normally this would be necessary only for turning the tractor at the ends.

Cultivates at higher speeds . . .

There are several factors which control the highest speed at which the unit will successfully control the tractor. However, cultivating can be done consistently at speeds of 5½ to 6 miles per hour as compared to the normal 2½ to 3.

It can be used with row crops other than corn. However, the plants must have enough rigidity to push the feeler to one side if necessary.

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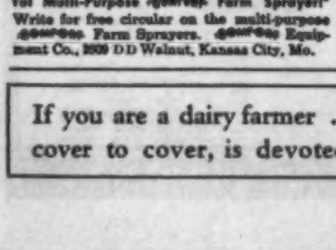

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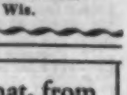

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Kill brush with pellets

by J. W. Herron

PELLETED fenuron was effective in controlling many species of woody plants in experiments conducted at the University of Kentucky in 1958 and 1959. Rates of the material ranged from 24 pounds per acre to 100 pounds per acre of the commercial product.

Best results from treatments of fenuron occurred when the applications were made in late winter or early spring.

Several factors may affect the rapidity of response of plants to soil treatments. Sufficient rainfall is necessary to carry the material into the root zone where it can be absorbed by the plants. Brush growing in sandy loam responded much more rapidly to treatments with fenuron than brush growing in heavy clay loam.

The majority of herbicides used in chemical brush control at the present time require water or oil and spray equipment for application. Fenuron pellets can be applied as they come from the package with no mixing or spraying required. They can be broadcast by hand or with a cyclone-type seeder.

Pellets can be applied much quicker than spray materials, thus considerably reducing labor costs. There is no danger of drift when applying fenuron pellets.

However, it is important not to treat the area into which the roots of desirable plants extend. At recommended rates, fenuron is low in toxicity to man and animals.

Pelleted fenuron can be used as an over-all treatment or applied as a spot treatment to individual brush clusters or trees.

50 to 75 pounds per acre . . .

Although some plants will be controlled at low rates, for general brush control it is advisable to stay within the 50 to 75 pounds per acre rates of the 25 per cent formulation of fenuron. Spot applications can be made at the rate of 1 tablespoonful for each ½ to 1 square foot at the base of each cluster.

Woody plants that appeared to be most susceptible to treatments with fenuron pellets at the rates of 50 to 75 pounds per acre are: Birch, box elder, red cedar, wild cherry, sycamore, elderberry, elm, poison ivy, wild grape, hackberry, locust, maple, mulberry, oak, pine, red bud, service berry, and willow.

Of the plants included in the experiments, those that appeared to be most resistant to similar treatments were sassafras, white ash, black walnut, mountain laurel, and flowering dogwood.

The author is an associate professor of horticulture, University of Kentucky.

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HELP WANTED

WANTED: Experienced artificial breeding technicians. Through our frozen semen program and freezers, areas may be developed in any state. References required. Write PIPER BROTHERS FARMS, Watertown, Wisconsin for details. 5-*

WANTED: Married man preferred, for large Guernsey herd in Northwestern Ohio. Pleasant working conditions, modern equipment, good modern house and extras. Must be sober and reliable; a good cowman and milker. State experiences, qualifications and references in first letter. RONALD FARNHAM, Alphine Farms, Edgerton, Ohio. Phone CV-8-4865. 9-2

WANTED: Well experienced working herdsman for a three hundred cow dairy. Have modern ten cow milking parlor. Must know how to handle men and cows. Responsible for one shift only, as have a day crew and a night crew. Top salary for right man. Give age, experience, salary expected, size of family. George F. Lucas, LUCAS FARMS, INC., Route 1, Box 946, Mesquite, Texas.

WANTED: Single man on dairy farm. Give age, experience, references of past employers. Write POST OFFICE BOX 22, Rockdale, Wisconsin.

HERDSMAN for large Guernsey herd, located in Southeastern Michigan. Top wage with percentage plan and small modern house. Must be thoroughly experienced in handling, feeding and caring for cattle, and be able to take complete charge of a large herd. Write BOX 460, care Hoard's Dairyman, Fort Atkinson, Wisconsin, stating complete work history, age, family status and references. 10-2

EXPERIENCED MAN from Midwest, with references, for registered Holstein herd of 150. Over 500# on Grade A. In Southern Wisconsin. Must be a very good milker and like to work with cattle. Pipeline, silo unloader, barn cleaners. Very good wages, hours, and housing. BOX 458, care Hoard's Dairyman, Fort Atkinson, Wisconsin.

MARRIED MAN for modern 100-cow dairy farm near Flint, Michigan. Starting wages $275 per month with raises to $300 in six months and $325 in one year. This is a permanent position on a long-established dairy farm. Opportunity to share in profits after one year. Sixty-hour work week with overtime pay, vacation, house, bed and milk furnished. Write experience and qualifications. No phone or personal calls without a letter first. GEORGE BURROUGHS, 1422 West Cook Road, Grand Blanc, Michigan.

WANTED: 4 milkers for our new milking unit. Ultra-modern loose housing and milking parlor. Prefer married men. Exceptionally good schools, churches and living conditions. No field work. GREEN MEADOW FARMS, Elsie, Michigan. 9-2

SWINE

WISCONSIN FEEDER PIGS for sale. 40 to 50 lbs., castrated, all top slick pigs. Delivered direct. 5 day guarantee. C. ACKER, Middleton, Wisconsin. TE-6-3451. 9-*

DOGS

GENUINE English Shepherd and Collie Pups. Healthy and strong. Guaranteed heelers. Year's trial. Choice of sex. Spayed females a specialty. Priced right. CLOVERDALE KENNEL FARM, Ackley, Iowa. 18-*

SHEPHERDS, COLLIES. Outstanding Heelers. Watch Dogs. ZIMMERMAN FARMS, Flanagan, Illinois. 2-*

POULTRY—BABY CHICKS—DUCKS

ROCKS, REDS, Leghorns, 60 breeds. $3.99 to $8.99; Pullets, $11.99 to $20.99; assorted, $1.49 to $5.99. Heavies, included, catalogs. BUSH HATCHERY, Clinton, Missouri. 9-8

HAY AND BEDDING

GRADED DAIRY ALFALFA and other grades hay. ART CALLARI HAY COMPANY, Upper Sandusky, Ohio. 20-*

SEEDS AND PLANTS

SWEET POTATO PLANTS: Guaranteed. Improved Porticos 200-$1.00; 500-$2.00; 1000-$3.50; 5000-$16.25. Nancy Halls, "Vineless" Porticos, Georgia Reds, Gold Rush, Redgolds 200-$1.25; 500-$2.50; 1000-$4.00; 5000-$18.75. Free "Growing Potatoes Everywhere." STEELE PLANT COMPANY, Gleason, Tenn.

CERTIFIED PLANTS: Pay on arrival. Frost-proof cabbage, onions, tomatoes, pepper, broccoli, brussels sprouts, collards, cauliflower, sweet potatoes, 200, $1.50; 500, $2.50; 700, $3.00; 1,000, $3.50; 5,000, $16.25. Transplanted plants, 100, $1.50; 500, $5.00; 1,000 $9.00. Leading varieties, mixed as wanted, moss-packed. TEXAS PLANT FARMS, Jacksonville, Texas. 9-2

SWEET POTATO PLANTS: Tennessee Nancy Halls, Porto Rican, Yellow Yam, All Gold, Georgia Reds. 200-$1.25; 400-$2.00; 500-$3.50; 700-$4.00; 1000-$5.00; 10,000-$45.00. Postpaid. You have nothing more to pay, millions ready now. SUPERIOR PLANT FARM, Union City, Tennessee.

AUCTIONEER SCHOOLS

LEARN AUCTIONEERING, terms, soon. Free catalog. REISCH AUCTION SCHOOL, Mason City, Iowa. 23-*

LEARN AUCTIONEERING. Free catalog! MISSOURI AUCTION SCHOOL, Box 9252D4, Kansas City, Missouri. 19-*

OF INTEREST TO WOMEN

AVERAGE $2.00 HOUR sparetime, assembling our lamps. Simple. Easy. No canvassing. Write: OUDOR, Caldwell 24, Arkansas. 4-*

$2.00 HOURLY possible sewing our ready cut aprons at home. Spare or full time. Experience unnecessary. Write A & B ENTERPRISES, Caldwell 17, Arkansas. 6-*

MISCELLANEOUS

HOW TO TRAP SPARROWS with elevator traps. Information every farmer should have. No obligation. It's free. Write SPARROWTRAPS-605, Detroit Lakes, Minnesota. 9-4

PLASTIC CLOTHS. Two clear 9x12'—$1.50. Tripleweight tarpaulin 9x12'—$1.98, 9x20'—$3.34. Postpaid. Plastic to 40x100'. ADVAL, Box 439V, Hackensack, New Jersey.

FREE: If you own cows, let us send a year's subscription (12 issues) of The Ayrshire Digest, official magazine of records, pictures, activities and advertisements of Ayrshire breeders. Mail your name, address, and number of cows and heifers you own to MEREDITH FARM, Topsfield, Massachusetts. Offer is limited to present non-subscribers of the Digest and to one subscription per family.

DAIRY CATTLE

NEW LOADS WEEKLY from Shores' Wisconsin Association herds. Special truck load prices $200 up. Bang's, Lepto, Shipping vaccinated. Delivered. Travel expenses refunded. Premiums. HAROLD SHORES, Neligh, Nebraska, TU 7-4060. TU 7-4850. 9-*

CANADIAN Registered Holsteins. Young vaccinated cows and heifers. Buy direct from the farms. Elgin County Holstein Breeders Club. Telephone Talbotville, Ontario 6-R-12. DON SHORE, R.R. #6, St. Thomas, Ontario, Canada. 7-*

KENYON BROTHERS FARM serving the dairy farmer for forty years. Large selection of choice Holstein cows and first calf heifers, fresh and close springers, service bulls. T.B. and Bang's tested. In carload or truckload lots. KENYON BROTHERS CO., Elgin, Illinois. Phone SHerwood 1-1818. 19-*

HIGH QUALITY Holstein and Guernsey springers and heifers all sizes. J. W. & BILL GEURKINK, telephone 322 or 21F31, Baldwin, Wisconsin. 15-*

BUY YOUR VACCINATED dairy cows and heifers direct from the farmers where quality prevails. GEO. E. SWANSON, Rice Lake, Wisconsin. Phone 944R. 2-23

KEATING BROTHERS FARM offers large selection fresh and springing selected cows and heifers, strictly quality. Dairymen—buying on order will save you time and money. Call or write Fort Atkinson, Wisconsin. Telephone JOrdan 3-5905. 18-*

WISCONSIN HOLSTEINS for the Southern states. Heifers and cows on hand at all times, originating from the best producing herds in Southern Wisconsin. Artificial breeding. Bang's and T.B. tested for any state. Call P. E. ELAM, Marshall, North Carolina, phone 3451, or Mars Hill, North Carolina, 2381 nights. 22-*

REGISTERED HOLSTEINS: A few service age bulls, some younger males, foundation females and heifers. Nearly all sired by excellent sires and from classified dams with DHIR records. SanMarGale FARMS, Box 365, Lebanon, Ohio. Phone 5-2606. 22-*

HOLSTEIN cows and heifers with production, type and size from our foundation Wisconsin herds. Artificial breeding, calfhood vaccinated, Bang's and T.B. tested. PIPER BROS., Watertown, Wisconsin. Telephone 2170. 6-*

WE ARE NOW READY to fill your orders for Holstein and Guernsey cows and heifers. Shipped direct from farmer to you on commission basis. CHET BURNSTAD & SON, Tomah, Wisconsin. Phone Tomah 406-M or 753-R-12. 16-*

DAIRY CATTLE SALES, every Thursday, April through October. Top springer cows and heifers, 400 to 600 head every sale. MATTES LIVESTOCK MARKET, Thorp, Wis. 10-*

CHOICE HOLSTEIN cows and heifers, all ages. Vaccinated. T.B. free. Fieldman available, or will fill orders as directed. Whitewater Dairy Association, DEAN HARNDEN, Whitewater, Wisconsin. Phone Palmyra 356. 1-*

CANADIAN HOLSTEINS direct from the farms. Registered. T.B. and Bang's certified. MIDDLESEX HOLSTEIN BREEDERS ASSOCIATION. Phone Lambeth OL 2-2616. Hardy Shore, Glanworth, Ontario. 15-*

MORE SPECIAL OPPORTUNITIES ON NEXT PAGE

Stop leaky ponds with STPP

Used in household detergents, this chemical does a good job for less than 1 cent per square foot.

by E. V. Wickline

DO YOU have a farm pond that won't hold water? Does the pond have what seems to be good water-holding clay but lets water go right through?

If you do, don't give up. Your problem may be similar to one farmers in Greenbrier County, West Virginia, are solving by using sodium tripolyphosphate as a sealing agent. This is a common chemical that's been used around the household for years in detergents. It's inexpensive and harmless to humans and livestock.

Some 65 farm ponds have been treated in Greenbrier County during the last 3 years for less than 1 cent per square foot, including labor and materials. Soil conservation Service technicians point out that it is not known how permanent a seal has been reached but the success so far justifies continued use of the chemical.

Three-fourths of the ponds treated were complete failures prior to treatment. Since application of STPP, these ponds have maintained water levels ranging in depth from 3 to 9 feet depending on the level to which the treatment extended. Some new ponds were lined at the time of construction on soils where excess seepage was likely to occur. On the whole, the chemical treatment is better than 95 per ecnt effective.

Sealed pond for $48 . . .

Frank McClung, a dairyman at Organ Cave, built a farm pond in 1953 that leaked like a sieve. The pond would fill with each hard rain but leaked until only a foot or so of water remained. The pond, for all practical purposes, was a complete failure.

Four years later, McClung applied the STPP treatment. The water level now holds at 6 feet, almost the exact level to which the treatment extended. Four hundred pounds of STPP were used at a cost of $48.

D. A. Skaggs of Fort Springs, had a large sink in a pasture field that collected 6 to 8 feet of water after a downpour but the water disappeared in a few hours. No other suitable pond sites were available on the farm. So, Skaggs shaped the sink as a dugout pond. And on recommendation of his soil conservation district, he treated the soil inside with STPP. Today the water holds at 8 feet. The cost—$36 for the bulldozer to reshape the reservoir and $36 for 300 pounds of STPP.

Make a simple test . . .

It's simple to treat a pond with STPP. The first thing to do is test the soil to see if the chemical will do the job. Add a pinch of STPP to a small handful of the moist questionable soil and thoroughly mix; then knead as you would dough. If the soil becomes noticeably wetter, the chemical is working properly.

As a further test, using treated soil, mold a ball about 1 inch in diameter. Make an equal size ball of untreated soil and allow both to dry overnight. Now put each in a separate glass of water. If the STPP is working properly, the treated ball will melt down much slower than the untreated one. If the tests are favorable, you are ready to treat the pond.

Remove all mud and water from the pond. Reshape or deepen as desired and cover any rock outcrop or other doubtful areas with 2 feet of as good a clay as is available. Thoroughly pulverize area to be treated with a tractor-drawn rotary tiller, corn cultivator, disk, or springtooth harrow.

Spread STPP at the rate of 1 pound to 20 square feet of soil. This is equivalent to just over 1 ton per acre and the fertilizer spreader can be used for the spreading job. Now, thoroughly mix the chemical into 6 inches of soil. If you are unable to get a good mix, double the amount of chemical.

You are now ready for the all important job of compacting. A sheep's-foot roller does the best job but a farm tractor is acceptable if you will spend a little more time. The soil should have about 15 per cent moisture for good compaction which is just enough to make a handful of soil stick together after it has been squeezed tightly. If the soil is too dry, sprinkle it while continuing the mixing operation. The soil is too wet for good compaction if it sticks to the equipment being used for rolling.

After finishing the compaction, mulch the entire treated area with straw at the rate of 1 bale per 1,000 square feet.

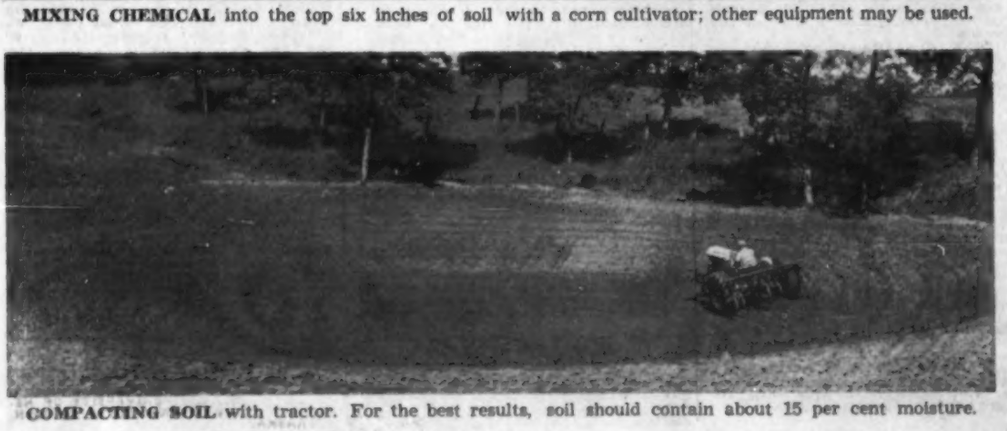
Successful results with STPP as a pond sealer lie in thorough and complete mixing along with a thorough compaction job. Don't slight either one.

Only time will tell whether or not the effect of treating soil in a pond with sodium tripolyphosphate is permanent. Greenbrier farmers on the limestone soils have been plagued with livestock water shortages so long that the common reaction is, "So it might not be permanent; for no more than the job costs, I'll gladly treat the pond again if it needs it!"

The author is a work unit conservationist with the Soil Conservation Service of the U.S. Department of Agriculture in West Virginia.

Faith sees the invisible, believes the incredible, and receives the impossible.

MIXING CHEMICAL into the top six inches of soil with a corn cultivator; other equipment may be used.



COMPACTING SOIL with tractor. For the best results, soil should contain about 15 per cent moisture.

Special Opportunities

DAIRY CATTLE

WISCONSIN DAIRY CATTLE, Holsteins. Springing cows and first calf heifers. Heifers for early fall freshening, also open heifers any size. We have drivers available to buy direct from farmers, or will fill orders at your direction. GONNERING BROS., Livestock, Route 1, Kaukauna, Wisconsin. Phone Little Chute ST-8-3333. 7-12

ATTENTION-DAIRYMAN. Attend Wisconsin's largest dairy auction. Selling all classes of dairy cattle every Wednesday. Also order, buy, and deliver. Central Wisconsin Livestock Auction, Tomah, Wisconsin. For further information call or write JERRY RANDALL, Augusta, Wisconsin. 5-12

FOR SALE: Holstein springing heifers and cows. Good selection of open and bred heifers. R. B. BRICHER, Rt. Charles, Illinois. Phone JU-4-2347 days, JU-4-2895 nights. 3-24

WISCONSIN fine quality Holstein and Guernsey springing heifers and cows. Also yearling heifers. Competitive prices. Will ship C.O.D. CALL 247 R, collect, at Frederic, Wis. 10-spl.

WHOLESALE DAIRY CATTLE, $200 and up. TOWNE LIVESTOCK COMPANY, phone 81M, Rosendale, Wisconsin. 10-3

TOP QUALITY HOLSTEIN springing cows and first calf heifers. Heifers for early fall freshening. We also ship on orders. Write: ELGAS BROTHERS, Jefferson, Wisconsin. 10-4

HOLSTEIN COWS $300. DHIA records. Service age bulls. J. V. "JAKE" LUDWIG, Pithian, Illinois. Phone Prescott 6-3421.

DODGE COUNTY HOLSTEINS. Heifers of all ages from the Heart of Dairyland. Write for details. HICKEY BROS., Juneau, Wis. 10-3

100 DAIRY CATTLE for sale, both Jerseys and Holsteins. Sell all or a major fraction thereof. Together with two year lease, subject to renewal, or will sell cattle without lease. Price of milk at present is $5.20 per hundred, 4% milk. Good equipped parlor setup. Terms of lease include 5 per cent of gross milk check. For further information write: MILTON TOWNSEND, Star Route, Box 72, Clovis, New Mexico. 10-*

Sales Announcements

May 28, 1960 — Ayrshires—First sale. Strathglass farm dispersal. Port Chester, New York. 10:30 A.M. Sales Manager, Granger Sales Company, Thompsonville, Connecticut. For catalog write Sales Manager or Strathglass Farm.

June 4, 1960—Brown Swiss—12th Wisconsin State Sale, Sauk County Fairgrounds, Baraboo, Wisconsin. 11:30 A.M. 55 head. For further information write: Norman E. Magnussen, State Sale Secretary, Lake Mills, Wisconsin.

July 23, 1960 — Ayrshires—Second sale. Strathglass farm dispersal. Port Chester, New York. 10:30 A.M. Sales Manager, Granger Sales Company, Thompsonville, Connecticut. For catalog write Sales Manager or Strathglass Farm.

July 27, 1960 — Guernseys — Crestwood Farm registered Guernsey dispersal. For catalog write Carl E. Kehret, Streverling Guernsey Dairy, Austin, Minnesota.

DISPLAY

LIVESTOCK DISPLAY ADVERTISING RATES

COPY MUST REACH US ONE MONTH BEFORE ISSUE DATE

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For advertising of consignment, dispersal or reduction sales; breeders herds and individual animals.

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Midwestern Dairymen ! ! !

Fine foundation **SPRINGING** heifers, yearlings, cattle of all ages. These are sold on commission basis to you. We have buyers throughout the northern dairy states and can supply the finest for the best possible price. One of the midwest's largest dealers serving dairymen for the past 8 years. We will deliver C.O.D. to your farm by our experienced drivers. We are moving 300-500 head per week.

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gathers information that's important for you to know . . . so we can present it to you in easy to read form twice-a-month.

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MOST PROFITABLE COWS

4% MILK

Big Milkers - - Hardy Rustlers
Good Grazers - Perfect Udders

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200 HEAD
REGISTERED AYRSHIRES

FIRST SALE: Saturday May 28, 10:30 A.M. (E.D.T.) 80 Head Young Females, (some bred heifers), 10 young bulls.

FINAL SALE: July 23.
MILKING HERD
SOME BRED HEIFERS 10 BULLS

Sale Manager:
Granger Sales Co. Thompsonville, Conn.

REGISTERED AYRSHIRE BULL CALVES, double approved sire, dams record 16,880 lbs. milk, 850 butterfat. Also have heifer calves priced reasonable. Write: GREENFIELD FARM, Route 2, Box 63, Mukwonago, Wisconsin.

YOUR FUTURE AYRSHIRES WILL RING A BELL—

If you get a good bull from Mar-Ral!

(write for prices)

MAR-RAL FARM, R.R. #1, Algonquin, Ill.

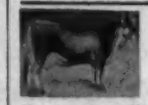
NOW YOU CAN BUY

POLLED AYRSHIRE BULL CALVES

That are from high producing families
That are of Carefree Farms & Pensharst Breeding
That give you excellent type calves
That are priced at prices sure to please

WRITE FOR PEDIGREES AND PRICES
CAREFREE FARMS NEW HAVEN, INDIANA

BROWN SWISS



WHAT'S THE MARKET VALUE OF A COW?

You may be milking cows today that have little market value when they have to leave the herd. Regardless of the nature of your dairy operation—A small herd, a commercial milking parlor set-up, or even a milking factory where perhaps a herd of a thousand cows or more are handled, your discard cows must be sold.

No one likes to haul a cow to market and find she has little or no market value. BROWN SWISS Cows are large and have a high market value.

Mature BROWN SWISS cows will weigh 1400 to 1600 pounds, mature bulls 1900 to 2400. An animal of this kind is worth a lot more when sold on the market.

Brown Swiss Have A High Market Value

For more information about the breed—Write:

BROWN SWISS ASSOCIATION Beloit, Wis.

12th WISCONSIN STATE
BROWN SWISS SALE

SATURDAY, JUNE 4, 1960

11:30 A.M.

SAUK COUNTY FAIRGROUNDS
BARABOO, WISCONSIN

55 HEAD 3 Bulls 52 Females
T.B. & Bangs Tested Calfhood Vaccinated

Consigned by Wisconsin's leading breeders. All consignments have had to meet type and production requirements. For further information write:

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LAKE MILLS, WISCONSIN

HYCREST FARMS
P.O. BOX 388 LEOMINSTER, MASS.
HOME OF:
242 classified animals that average 84.4%
216 tested cows that average 575 lbs. fat
(305-2X-ME)
SPECIALIZING IN SPECIAL BULLS FOR SPECIAL RESULTS.

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PRODUCTION BRED JERSEYS

OUR 1959 HERD AVG.
9,463 lbs. milk 528 lbs. fat
Classification avg.—86.8%
Choice bull calves are available

PIXY FARM HUDSON, WISC.

I have choice high grade bred Jersey and Guernsey heifers, also fresh and springer cows. All T.B. and Bang's tested. Come and make your selection, or will fill your order or help you buy. Phone University 5-4115. CLAUDE THORNTON, Route 2, Box 256, Springfield, Mo.

Brigham Jerseys

We Can Supply Only A Very Few Of The Jerseys Needed To Boost Milk Solids Content In Dairy Herds. But Brigham Heifers We Now Offer Are From A Background Of 500 to 600 Lbs. Fat For 19 Consecutive Years — 2x milking!

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Send for FREE handbook on how to start a successful Guernsey Herd. Also includes information on the profitable business of producing and selling Golden Guernsey Milk.

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Large selection of high grade cows and heifers of all ages. Calfhood vaccinated — lab. tested. We feed well balanced ronghage for top production and size. Buy direct and save. Experienced insured transportation.

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Dams. ave. 12897# m., and 647# fat, 305d. 2x, and 87 type score. Flash sons for sale, out of dams with 9000 to 13400# milk, and 400 to 640# fat, 305d. 2x-HIR, with 82 to 89 type score. Registered females for sale.

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We have a few choice bulls from proven cow families, by plus proven sires. Now arriving—sons by Raven Burke Ideal out of cows with up to 813 fat. Our 1959 DHIA herd average was 14,353 milk 3.8% 552 fat. Write, or visit us for pedigree and prices. UNIVERSITY OF NEBRASKA DAIRY DEPARTMENT, LINCOLN, NEBRASKA.

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"I wanted a high producing, registered Holstein herd and decided that American Breeders Service with its high-indexed proved bulls was my best bet. I would quit worrying about buying bulls and concentrate on dairying. I bred a few cows to ABS bulls in 1949-1950 and have been breeding across the board with ABS bulls ever since. When I started Owner-Sampler testing I saw what the ABS cows were really doing. The big share of my improvement since I completed my first Owner-Sampler testing year (November 1952 through October 1953—which was 24.7 cows averaging 13,100 pounds of milk, 3.72% test, 486.9 pounds of butterfat) is attributed to better breeding because no major changes in management whatsoever have been made since that time.

I find ABS heifers consistent high producers . . . I have culled only three cows in five years, that I can recall, for low production."

Dean Taylor

Dean Taylor
Whitewater, Wisconsin

Some of the ABS cows that helped make this one of the top DHIA Holstein herds in the United States.

Herd average for test year ending in 1959
30.3 cows 2x 15,795 M. 3.93% 621 B.F.

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Address.....
City..... State.....

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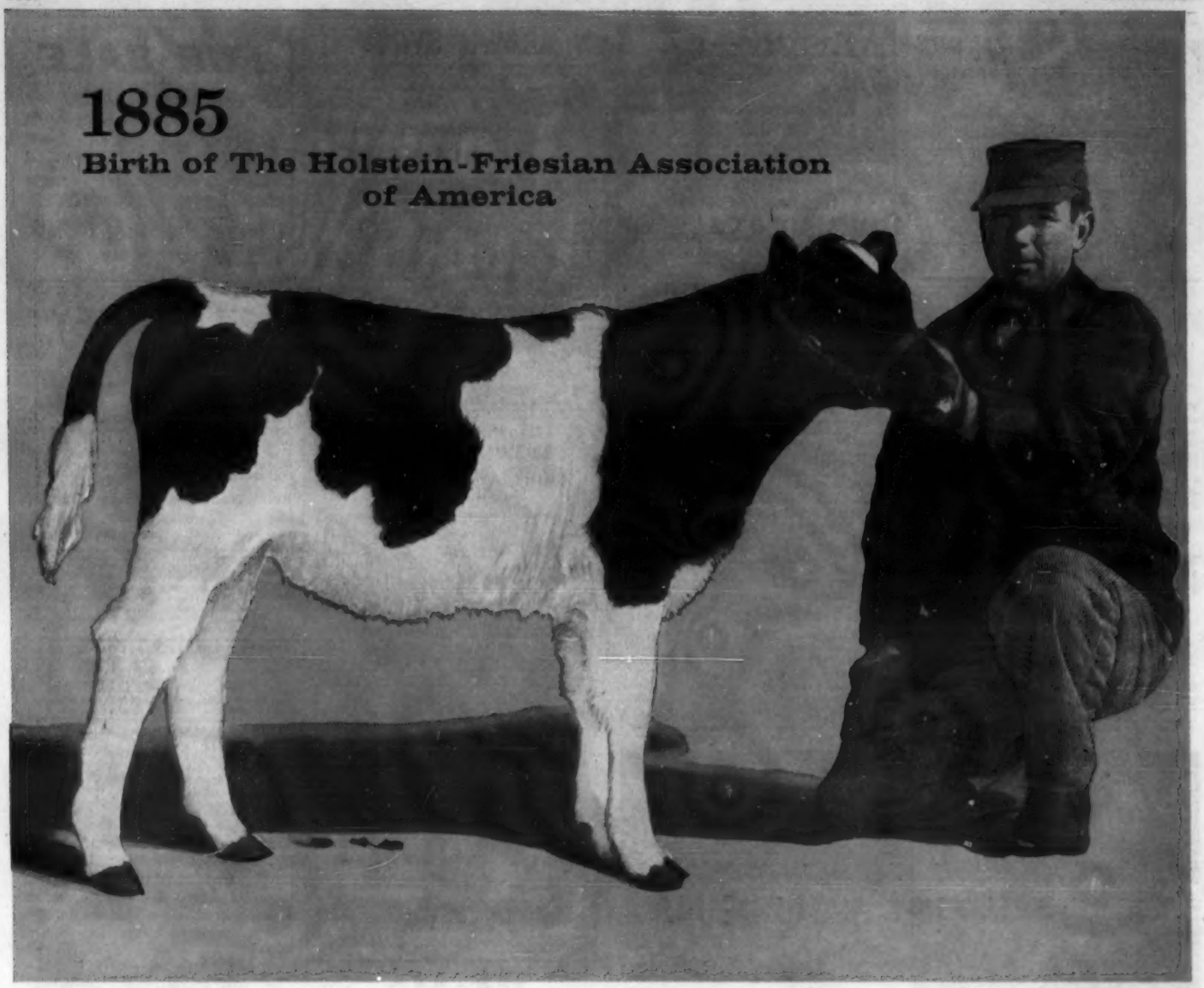

75 years and 6,500,000 registrations later—

REGISTERED HOLSTEINS lead the way

The calf shown above recently became the *five millionth* purebred Holstein *female* to be registered since The HOLSTEIN-FRIESIAN Association of America was organized in 1885! In addition, nearly one and a half million purebred Holstein *bulls* have been registered.

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His sire, Fraces Ideal Pilot, is a "Very Good" Gold Medal sire with an average type score of 85.4 on all his classified daughters. The daughters score especially high in udders and rumps.

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Carnation Ideal Winsome is a maternal brother to Carnation Madcap Magistrate, proven in the Clayton Allard herd and sold to Tri-State Breeders, and Carnation Madcap Grandier, one of the top sires in the Evergreen-Northwest Breeders Association, Mount Vernon, Washington.

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Brisket disease

In the western states, particularly in high altitude areas, brisket disease of cattle is observed mostly among young calves born on mountain slopes or in young animals brought there during the first few months of life. Cattle of all ages, however, are susceptible. In addition to a swelling of the brisket, there is also swelling of skin and underlying tissues of the neck.

The disease is chronic in character and fatal in the majority of cases. Usual duration of the disease is from two weeks to three months.

The cause is unknown. Disturbances of metabolism or deficiency of some essential nutrients have been regarded as contributing factors. High altitudes also have been suspected of being responsible.

Medical scientists from the University of Utah have been studying the disease to determine if a correlation exists between it and heart disease (or so-called mountain sickness) in man.

Scientists have found that affected animals develop a right heart failure. The heart valve between the right atrium and the right ventricle does not work properly and this may cause death. Studies of movements in the circulation of the blood (hemodynamics) show that failure is brought about by pulmonary (lung) hypertension which is related to altitude exposure. It is apparently the counterpart of pulmonary hypotension (heart disease in man). Studies are being continued.

Symptoms . . .

The animals appear listless. There may be a slight moist cough and increased breathing. Diarrhea may be present, which may be the first symptom noted.

In some cases the animal may be gaunt, due to failure to consume the usual amount of food. In some cases appetite is normal until a few days before death.

Swelling of the loose skin of the neck gradually develops. It may extend from the brisket to the jaw. Swelling of the brisket, as a firm doughy mass, frequently extends beyond the forelegs. There is no pain or pressure and no increase in temperature in the swollen areas. The brisket is infiltrated with clear fluid which can be expressed easily from section tissues.

Treatment . . .

Affected animals should be kept quiet. If it can be avoided, they should not be driven or disturbed. Quality hay and plenty of water should be available. Daily treatment with appropriate doses of fluid extract of digitalis has been found beneficial in some cases.

VIBRIO INFECTION

In the past two years I have had 9 cows abort in a herd of 28, anywhere from 3 to 7 months. We have tested each cow for everything as soon as she aborts.

The last two cows we tested showed a reaction to vibrio. Our veterinarian applied a disinfectant, and in about two to three months I again bred these cows. They all settled and carried their calves the normal period.

Is there anything I can give the cows or a spray I can use in the barn?

Two of the nine cows were heifers bred by a bull that had never had contact with a cow.

Unity, Maine **B.G.C.**

If vibrio infection is the sole cause of the abortions in your herd, then by switching to artificial breeding and establishing a good breeding health program, you will be well on the way to solving your problem. Other factors, however, may be involved and certainly checks or tests should be made for leptospirosis, brucellosis, and possibly even trichomoniasis, particularly if a bull had previously been used naturally.

TREATING PINKEYE

What causes pinkeye? Will calves go blind with it? What is the best way to treat it?

Edmore, Mich. **P.W.**

Pinkeye is an inflammation of the eye caused by a variety of bacteria. Since this is the case, there is no one best treatment. There are suitable products in the form of powder, liquid, or ointment that give good results. Usually the drug consists of one or more suitable antibiotics together with some type of anesthetic to relieve pain.

Animals may be treated once or twice daily, depending upon severity. If possible, keep the animals out of the bright sunlight and, during hot weather, away from flies and dust. Some forms of pinkeye are very contagious. Occasionally an individual will go blind, but usually animals respond to treatment and the eye returns to a practically normal state.

BRAIN INJURY?

We have several calves that were shipped in from Nebraska about six weeks ago. They have a sickness which causes them to circle around almost continuously. They all go to the right side and seem to be sort of paralyzed in their limbs. With penicillin and streptomycin treatments, they recover in four or five days. Then a few of them have one eye sort of closed and one ear back. They water out of the mouth constantly and seem to be unable to swallow. When they drink, they put their whole nose in the water.

O'Fallon, Mo. **A.J.B.**

It appears your calves are suffering from some type of meningitis or brain injury, probably brought on by some type of infection. The symptoms you describe also apply to the disease listerellosis.

It may be advisable to have your veterinarian submit a sick calf to the Pathology Department, School of Veterinary Medicine, University of Missouri, Columbia, Missouri, to determine the responsible agent.

A more logical approach to treatment can be made after an accurate diagnosis has been established.

Dave Livingston says:

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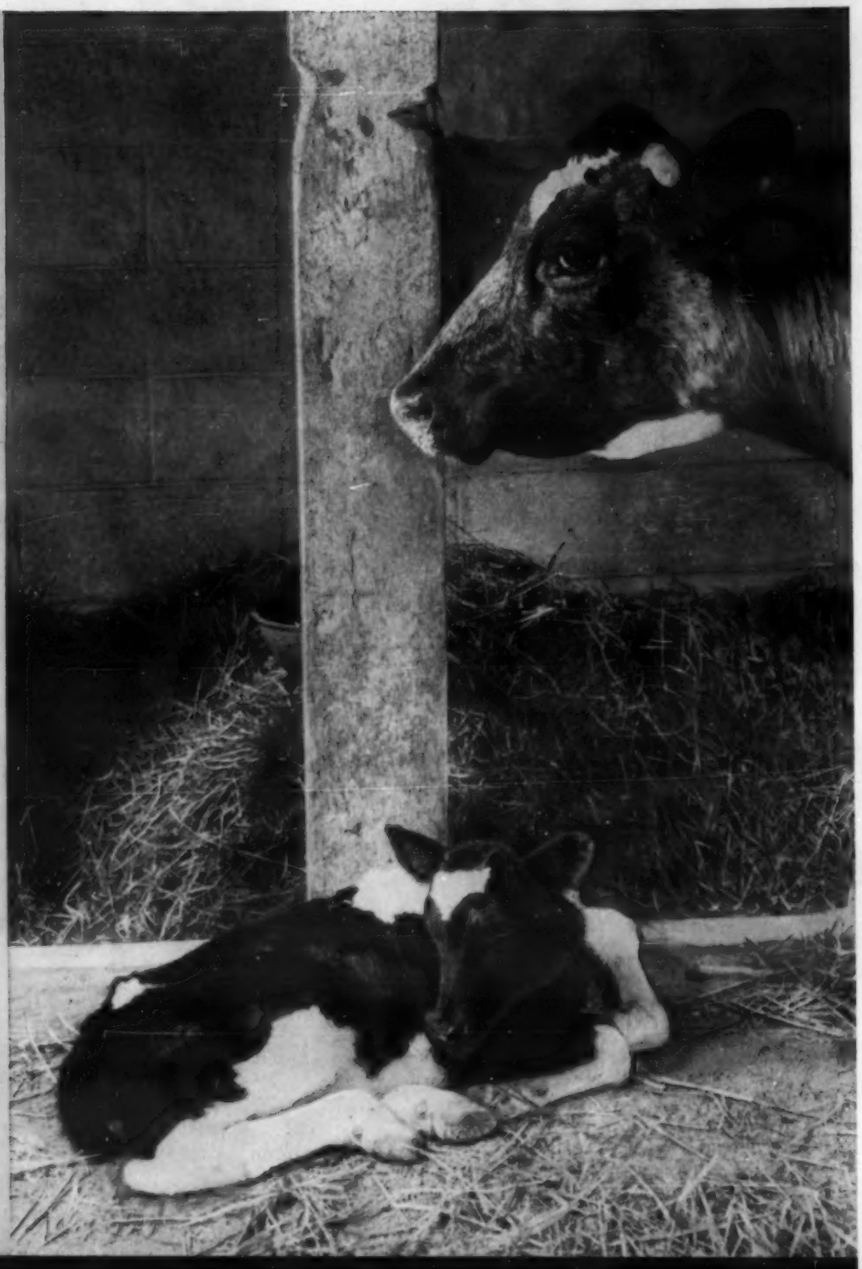

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